

BOROUGH OF



LEICESTER.

ANNUAL REPORT

ON THE

HEALTH AND SANITARY CONDITION
OF THE BOROUGH,

WITH

Quarterly and Yearly Tables of Deaths,

FOR 1883,

BY

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MEDICAL OFFICER OF HEALTH.

LEICESTER:

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TO THE MEMBERS OF THE SANITARY COMMITTEE OF
THE TOWN COUNCIL OF LEICESTER.

MR. CHAIRMAN AND GENTLEMEN,

I have the honor to present herewith my Annual Report as to the Health of the Borough, with an accompanying statement of the Sanitary work carried out during the year 1883.

It affords me much pleasure to state that the marked reduction in the general and zymotic death-rates reported on for 1882, underwent a still further improvement during last year; so much so that if, as may fairly be done, these special rates be taken as indicating the degree of prevailing sickness, the town never at any time during the last twenty-two years enjoyed a greater freedom from disease than in 1883.


The present Report has afforded me a fitting opportunity both to lay before you some of the advantages the town has derived from the Compulsory Registration of Infectious Diseases, and to complete the description (begun in 1881) of the extensive work done in the cleansing and improvement of the town sewers.

I remain, Mr. Chairman and Gentlemen,

Your obedient servant,

WILLIAM JOHNSTON

Town Hall, 1st February, 1884.



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MEDICAL OFFICER'S REPORT,

1883.

BIRTHS.



During the year 1883, the number of births registered in the Borough amounted to 4,787, of which 2,407 were males, and 2,380 females. These figures, although showing a decrease of 68 upon the births recorded in the previous year, are 9 in excess of the average for the preceding five years. Of the 4,787 births, 3,244 were registered in the sub-district of St. Margaret's, and 1,543 in that of West Leicester. 2,177 of the mothers of these infants were attended by medical men, and 2,610 by midwives. The birth-rate (births to population) was equal to 37·0 per 1000, against 38·4 in 1882 and 39·0 the average rate for the three previous years.

The number of illegitimate births last year amounted to 218, being equal to 1·5 per cent. of the total children born. The corresponding per centages for the two previous years (1881—82) were 4·4 and 4·5 respectively. From the statement given in the Appendix it will be seen that while the mortality among children born out of wedlock was very high (44·3 per cent.) in the district of East Leicester, the proportion of the deaths to births recorded in West Leicester was enormous and showed that considerably more than half of the children died from various diseases, the high fatality of which was, there can be no doubt, greatly increased by bad nursing and neglect on the part either of the mothers themselves, or of those under whose keeping these unfortunate children were placed.

DEATHS.

The total deaths recorded in the Borough during the year 1883 amounted to 2,501. To this number must be added 28 deaths that occurred in the Borough Fever Hospital, and 26 in the Borough Asylum, at Humberstone. From the total 2,555 fatal cases must be deducted 33 deaths that took place in the Infirmary, and 38 in the County Asylum, of patients who had been received into these institutions from county districts. The remaining number, 2,484, represents the corrected total deaths for the year under review. This number shows an actual decline of 46 upon that in the year 1882, and is 159 below the average returned in the nine preceding years. The rate of mortality for the year under notice was equal to 19·2 per 1,000 persons living, being 0·8 per 1,000 *lower* than the unprecedentedly low rate of 1882. Compared with the mean annual mortality of the eight preceding years (1875-82), the death-rate last year showed a remarkable reduction, amounting to no less than 4·1 per 1,000 of population.

The annual death-rate among males was equal to 21·2, and among females to 17·6 per 1,000 estimated as living of each sex. The excess of births over deaths, representing the natural increase to the population, was 2,303, which, although 22 below the accession received in 1882, was 212 above the average increase obtained in the three previous years. As a comparison of the death-rates of Leicester and the other large towns is instructive, I have shown in Table I. the death rates for each Borough in 1883 and the eight preceding years. Of the twenty towns tabulated it will be seen that only three had experienced a lower death-rate than Leicester,—the rate of the latter being no less than 2·6 below the average. The death-rates in the Borough for the quarterly periods of the year under notice were equal to 21·0 in the first, 19·0 in the second, 18·6 in the third, and 18·4 in the fourth. The comparatively high rate in the first quarter was owing to the exceptionally cold weather that prevailed in the spring, while the unusually low rate in the autumn quarter was no doubt to be ascribed to the greatly reduced fatality from diarrhoea.

TABLE I.

ANNUAL RATES OF MORTALITY IN TWENTY GREAT TOWNS, FOR THE
YEARS 1875-82 AND 1883.

Boroughs.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	Mean of the 8 years.	1883.
Average Rate ...	25.1	23.5	22.7	24.2	23.2	22.7	21.7	22.3	23.2	21.8
London ...	23.5	22.0	21.5	23.0	22.7	21.6	21.2	21.4	22.1	20.4
Brighton ...	22.4	19.7	18.8	21.3	19.1	19.8	19.0	21.7	20.2	19.2
Portsmouth ...	20.1	22.8	18.0	19.9	17.6	19.8	19.7	21.5	19.9	18.6
Norwich ...	24.4	21.7	20.7	24.3	21.7	24.3	19.5	20.6	22.1	19.6
Plymouth ...	20.9	22.4	22.0	25.8	22.9	35.1	19.9	21.2	22.5	20.9
Bristol ...	27.4	23.1	22.5	22.2	21.9	21.0	19.6	19.2	22.1	17.9
Wolverhampton	25.0	24.0	24.1	23.5	23.0	21.3	21.2	22.4	23.1	21.3
Birmingham ...	26.6	22.7	24.1	25.5	22.1	20.7	20.0	20.9	22.8	21.3
Leicester ..	27.7	24.1	22.6	22.1	23.2	25.0	21.8	20.0	23.3	19.2
Nottingham ...	26.1	21.9	21.1	20.1	21.6	23.8	22.4	23.6	22.5	21.2
Liverpool ...	27.5	27.5	26.3	29.2	26.9	27.1	26.7	26.5	27.2	26.7
Manchester ...	30.9	30.2	28.5	29.2	28.3	26.9	25.5	26.7	28.2	27.6
Salford ...	29.7	29.6	26.4	27.1	26.7	28.0	22.6	23.2	26.6	22.4
Oldham ...	27.9	26.9	25.1	27.0	22.8	24.7	22.8	24.6	25.2	22.0
Bradford...	28.3	25.2	23.3	24.1	22.9	22.9	19.7	21.2	23.4	18.4
Leeds ...	27.0	25.8	23.0	24.7	23.5	22.0	21.6	23.2	23.8	23.3
Sheffield ...	25.8	25.5	23.1	26.6	22.9	22.9	21.1	21.7	23.7	22.9
Hull ...	27.3	22.8	21.5	24.1	22.0	23.4	23.8	23.2	23.5	22.8
Sunderland ...	22.7	21.2	22.9	25.9	22.3	25.0	20.9	26.5	24.1	24.5
Newcastle ...	26.6	23.3	23.0	24.5	24.4	22.8	21.8	23.1	23.7	25.4

Tabular statements of the year's mortality within the Borough, classified according to diseases, will be found appended, and for comparative information similar returns for the two previous years are also given. A reference to the figures will show that, while the deaths from local diseases showed a considerable increase (98) upon the return in 1882, a marked decline (76) is observable in the deaths from zymotic maladies. As the mortality among persons living at the several aetal periods represents more correctly than gross death-rates do the condition of the public health, I have tabulated, as in former years, the age distribution of the deaths with the rates of mortality at different ages and groups of ages and, for comparative information, the English Life Table rates for the same age periods are also given. (Table II.) From the figures at the several aetal periods it will be seen that the total deaths recorded in the Borough last year included 1,271 of children under five years, and of these 913 were infants under one year of age. Compared with the corresponding Table for 1882, the deaths of children last year at both the ages specified showed an actual reduction irrespective of the increase of population at these ages. The rate of infant mortality, measured by the proportion of deaths under one year to births, was equal to 190 per 1,000, against 194 in 1882 and an average of 206 in the ten preceding years. The reduction in the deaths of infants last year was no doubt mainly owing to the much smaller mortality from diarrhoea during the summer quarter. Compiled in an annexed table will be found, (*a*) the distribution of the deaths among the seven Ward districts of the Borough, (*b*) the ages at death included under three groups of ages, and (*c*) the rate of mortality calculated upon the populations living in the several Wards.

The deaths accredited to East Margaret's and West and East Mary's include those which occurred in the Union Workhouse, the Infirmary, and the County Asylum; and, as patients were received into the first two institutions from every district of the town, to form a correct estimate of the deaths which took place among the actual population in these Wards, the fatal cases returned from the Union and Infirmary should be deducted from the total deaths registered.

DEATHS CLASSIFIED, RATES OF MORTALITY AND PERCENTAGE OF
TOTAL DEATHS IN 1883.

Class of Disease.	Deaths.	Death-Rate.	% of Total Deaths.
1.—Zymotic Diseases ...	397*	3·06	15·68
2.—Constitutional ...	337	2·60	13·31
3.—Local ...	1,181	9·12	46·65
4.—Developmental ...	525	4·05	20·74
5.—Violence ...	63	·49	2·49
6.—Ill-defined ...	26	·20	1·03

The following is the corresponding return for 1882 :—

Class of Disease.	Deaths.	Death-Rate.	% of Total Deaths.
1.—Zymotic Diseases ...	473*	3·746	18·69
2.—Constitutional ...	347	2·748	13·73
3.—Local ...	1,083	8·577	42·84
4.—Developmental ...	549	4·384	21·72
5.—Violence ...	61	·483	2·41
6.—Ill-defined ...	44	·348	1·74

The following is the corresponding return for 1881 :—

Class of Disease.	Deaths.	Death-Rate.	% of Total Deaths.
1.—Zymotic Diseases ...	567*	4·605	21·19
2.—Constitutional ...	332	2·697	12·42
3.—Local ...	1,101	8·912	41·14
4.—Developmental ...	560	4·548	20·92
5.—Violence ...	81	·658	2·20
6.—Ill-defined ...	36	·292	1·31

* These figures include the deaths which occurred in the Borough Fever Hospital.

TABLE II.

POPULATION, DEATHS, AND ANNUAL RATE OF MORTALITY IN THE
BOROUGH OF LEICESTER DURING THE YEAR 1883 AT SIXTEEN
GROUPS OF AGES COMPARED WITH THE ENGLISH LIFE TABLE
RATES AT THOSE AGES FOR PERSONS.

	Persons		Annual Rate per 1,000 persons living.	
	Estimated Population, 1883.	Deaths, 1883.	Leicester.	English Life Table.
All Ages ...	129,483	2,501	19·31	21·5
Under 1 year ...	4,248	913	214·92	165·38
1—2 years ...	3,555	209	58·79	65·58
2—3 „ ...	3,340	67	20·06	36·14
3—4 „ ...	3,205	54	16·85	24·33
4—5 „ ...	3,094	28	9·05	17·92
Total under 5 years ... }	17,442	1,271	72·86	55·7
5—10 years ...	14,536	56	3·85	9·6
10—15 „ ...	13,278	28	2·11	5·2
15—20 „ ...	13,617	39	2·86	6·5
20—25 „ ...	12,442	59	4·74	8·9
25—35 „ ...	19,733	146	7·39	10·3
35—45 „ ...	14,822	153	10·32	12·8
45—55 „ ...	11,002	142	12·91	17·6
55—65 „ ...	7,355	197	26·78	30·4
65—75 „ ...	3,910	215	54·99	62·4
75—85 „ ...	1,202	259	132·28	121·2
85 and upwards	143	36	251·75	258·3

TABLE III

POPULATION, DEATHS, AND ANNUAL RATE OF MORTALITY IN THE
BOROUGH OF LEICESTER DURING THE YEAR 1882 AT SIXTEEN
GROUPS OF AGES COMPARED WITH THE ENGLISH LIFE TABLE
RATES AT THOSE AGES FOR PERSONS.

	Persons.		Annual Rate per 1,000 persons living.	
	Estimated Population, 1882.	Deaths, 1882.	Leicester.	English Life Table.
All Ages ...	126,275	2,530	20·0	21·5
Under 1 year ...	4,143	942	220·74	165·38
1—2 years ...	3,467	200	57·7	65·58
2—3 „ ...	3,257	76	23·3	36·14
3—4 „ ...	3,126	48	15·4	24·33
4—5 „ ...	3,017	31	10·3	17·92
Total under 5 years ... }	17,010	1,297	76·24	55·7
5—10 years ...	14,176	60	4·23	9·6
10—15 „ ...	12,949	29	2·24	5·2
15—20 „ ...	13,280	45	3·39	6·5
20—25 „ ...	12,134	51	4·20	8·9
25—35 „ ...	19,244	142	7·37	10·3
35—45 „ ...	14,455	136	9·50	12·8
45—55 „ ...	10,729	159	14·8	17·6
55—65 „ ...	7,173	205	28·6	30·4
65—75 „ ...	3,813	227	59·5	62·4
75—85 „ ...	1,172	151	128·8	121·2
85 and upwards	140	26	185·7	258·3

The largest number of deaths last year occurred in Middle Margaret's Ward, and amounted to 698; the next highest numbers (after the deductions above referred to were made) were recorded of East Margaret's and West Mary's, being 455 and 376 respectively. When calculated upon the respective populations, the deaths recorded at all ages show that North Margaret's, Middle Margaret's, and All Saints', with rates of mortality equal to 22·53, 19·54, and 18·78 respectively, were the most unhealthy areas in the Borough; whilst St. Martin's and East Mary's were the most healthy,—their rates being only 9·31 and 12·05 per 1000.

The rates for 1883, compared with those of 1882, were as follow :

		1882.		1883.
St. Martin's Ward	...	9·08	...	9·31
North Margaret's Ward	...	22·87	...	22·53
Middle Margaret's Ward	...	20·52	...	19·54
East Margaret's Ward	...	15·99	...	15·61
East Mary's Ward	...	10·99	...	12·05
West Mary's Ward	...	15·82	...	15·19
All Saints' Ward	...	20·60	...	18·78

From the figures given above it will be observed that, with the exception of St. Martin's and East Mary's, an improvement took place in the death-rate of each of the Ward districts, the most marked being in All Saints' and Middle Margaret's.

The greatest mortality, relatively to population, among children under one year of age was in North Margaret's,—9·16 per 1000 last year as against 10·32 in 1882; whilst in Middle Margaret's for the same years the rates were 9·04 and 9·56; All Saints', 7·92 and 7·71; West Mary's, 6·06 and 6·45; East Margaret's, 5·66 and 6·09; and the lowest rates were in St. Martin's and East Mary's.

Tables V. and VI. contain information of a self-explanatory character.

As the general death-rate of a town district may with a close degree of accuracy be taken to indicate the disease-rate, the mortality of the year under review, when compared with the Borough records of preceding years and with similar returns of the sister towns, affords indisputable proof that Leicester enjoyed last year a period of unprecedented immunity from disease, and occupied a highly favourable position with respect to public health among the other large industrial centres of the country. To the Health Authorities of the Borough this issue cannot be regarded as otherwise than satisfactory. The result is especially so in that it has been attained under a continued struggle throughout the year to reduce the fatality and limit the spread of Scarlet Fever.

The subject of Scarlatinal prevalence in the Borough will be fully discussed further on in my Report.

TABLE IV.

WARD DISTRIBUTION OF DEATHS AND MORTALITY FROM ALL CAUSES, FOR 1883.

WARDS.	DEATHS.				· RATE PER 1,000.			
	Under 1 Year.	1 to 5 Years.	Over 5 Years.	All Ages.	Under 1 Year.	1 to 5 Years.	Over 5 Years.	All Ages.
St. Martin's Ward	4	1	16	21	1.77	0.44	7.09	9.31
North Margaret's "	122	56	122	300	9.16	4.21	9.16	22.53
Middle " "	323	130	245	698	9.04	3.64	6.86	19.54
East " "	166	72	334	572	5.69	2.47	11.46	19.62
East Mary's "	29	6	119	154	2.99	0.62	12.26	15.86
West " "	153	54	274	481	6.18	2.18	11.07	19.43
All Saints'	116	39	120	275	7.92	2.66	8.20	18.78
<i>Corrected Deaths.</i>								
East St. Margaret's	165	69	221	455	5.66	2.37	7.58	15.61
East St. Mary's	29	6	82	117	2.99	0.62	8.45	12.05
West St. Mary's	150	48	178	376	6.06	1.94	7.19	15.19

TABLE V.

SHOWING THE ANNUAL BIRTH RATE, RATE OF MORTALITY AND DEATH RATES AMONG CHILDREN,
FROM 1874 TO 1883 INCLUSIVE.

Year.	Birth Rate per 1000 of the population.	Annual Rate of Mortality per 1000 living.	Deaths of Children under one year: Per centage of Total Deaths.	Per centage of Deaths of Children under one year to Registered Births.	Deaths of Children under five years: Per centage of Total Deaths.
1874	41.195	23.992	38.226	22.262	49.175
1875	38.378	26.026	35.686	24.201	55.486
1876	42.093	22.521	37.372	19.995	54.730
1877	40.464	21.411	35.666	18.872	49.860
1878	39.876	20.728	39.240	20.520	54.800
1879	37.310	21.103	33.119	18.732	51.301
1880	40.390	24.70	36.038	22.016	58.167
1881	38.263	21.56	36.322	20.483	51.770
1882	38.443	20.05	37.264	19.443	51.312
1883	37.0	19.2	36.75	19.07	51.16

TABLE VI.

SHOWING THE POPULATION, INHABITED HOUSES, BIRTHS, DEATHS
AND MARRIAGES FOR THE YEARS 1873 TO 1883 INCLUSIVE.

GROSS NUMBERS.

Year.	Population Estimated at the Middle of the year.	No. of Inhabited Houses in District.	Births.	Deaths.	Marriages.
1873	102,515	21,020	4,452	2,478	1,209
1874	106,202	21,513	4,375	2,548	1,080
1875	111,000	22,193	4,260	2,889	1,186
1876	113,581	22,848	4,781	2,558	1,230
1877	117,462	23,695	4,753	2,515	1,183
1878	119,845	24,438	4,779	2,500	1,107
1879*	117,610	...	4,687	2,651	1,141
1880	120,325	...	4,860	2,960	1,179
1881	123,120	...	4,711	2,654	1,153
1882	126,275	25,511	4,855	2,528	1,201
1883	129,483	25,818	4,787	2,484	1,207

a. Population at Census, 1881, 122,376.

b. Area in Acres, 3,030.

c. Number of Inhabited Houses at Census, 1881, 24,974.

d. Average number of persons in each house at Census, 4.9.

* The populations from 1879 are corrected from the returns of the last Census.

ZYMOTIC MORTALITY.

The deaths registered in 1883 from the miasmatic order of the zymotic class of diseases amounted to 377, and comprised 16 deaths from Croup, 8 from Rheumatism, 6 from Puerperal Fever, 6 from Erysipelas, together with 332 fatal cases returned under the seven principal zymotic diseases.

The deaths from the principal zymotics, which include Small Pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, Fever, and Diarrhœa, were equal to 13 per cent. of the deaths from all causes and to a rate of 2·5 per 1,000 persons living. The zymotic death-rate in 1882 was equal to 3·2 per 1,000, and the average rate for the eleven preceding years (1872—82) was 4·72. The marked decline in the zymotic rate in 1883 mainly depended upon the low fatality from Diarrhœa, the deaths from which were 66 below the exceptionally low number recorded in 1882.

On looking over the *total* deaths from zymotic diseases given in Table VII. it will be observed that, notwithstanding the increase in population, the fatal cases recorded last year were less numerous than in any of the preceding fourteen years. From the same Table it will be seen that the deaths from Typhoid Fever were very few, being only 10 in number,—the lowest recorded of the disease in any previous year. Compared with the deaths from Typhoid Fever in 1882, the fatality last year from this cause showed a reduction of no less than 47 per cent. Further reference to Table VII. will show that the deaths from Measles were very much less numerous than in the preceding year, while the numbers from Scarlet Fever and Whooping Cough exhibit an increase.

The subjoined Table gives the zymotic death-rates in the principal large English towns for the three years, 1881—83, together with the average rates for the ten years, 1872—81.

TABLE VII.

SHewing THE DEATHS FROM THE SEVEN PRINCIPAL ZYMOTIC DISEASES IN THE FOURTEEN YEARS,
1869 TO 1882, AND IN THE YEAR 1883.

DISEASE.	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	Proportion of Deaths to 1,000 Deaths in 1882	1883	Proportion of Deaths to 1,000 Deaths in 1883
Small Pox	0	0	12	346	2	0	0	0	6	1	0	0	2	5	1.976	3	1.21
Measles	43	42	35	36	62	24	49	50	40	45	72	166	7	74	29.25	15	6.04
Scarlet Fever ...	8	263	112	5	6	18	175	173	33	12	105	119	184	72	28.45	91	36.64
Diphtheria	9	11	7	2	7	8	7	10	9	5	11	23	11	5	1.976	6	2.41
Whooping Cough	70	65	32	51	64	43	91	33	65	82	61	27	122	19	7.51	59	23.75
Fever	57	52	56	64	55	48	64	43	20	31	21	46	29	19	7.51	10	4.02
Diarrhœa	272	240	302	305	314	257	308	263	185	302	88	398	193	214	84.57	148	59.58
Total.....	459	664	565	829	512	398	694	572	358	478	358	779	548	408	161.24	332	133.65

TABLE VIII.

MORTALITY FROM ZYMOTIC DISEASES IN TWENTY GREAT TOWNS.

Boroughs.	1881.	Average Rate for 10 Years, 1872-81.	1882.	1883.
London	3·6	3·6	3·5	2·7
Brighton	2·2	2·4	4·2	2·3
Portsmouth	3·4	3·7	4·4	2·2
Norwich	1·7	3·5	2·5	1·0
Plymouth... ..	1·5	3·7	2·1	2·1
Bristol	2·3	3·1	2·4	1·2
Wolverhampton	2·2	3·8	3·3	1·6
Birmingham	2·7	4·7	3·5	3·1
Leicester	4·4	4·9	3·2	2·5
Nottingham	4·0	3·5	4·4	2·1
Liverpool	4·5	5·2	4·4	4·5
Manchester	2·3	4·7	3·8	3·6
Salford	2·9	5·7	3·9	3·3
Oldham	2·3	4·3	2·8	1·5
Bradford	2·0	3·9	3·3	1·5
Leeds	2·9	4·5	3·5	4·0
Sheffield	2·7	4·9	2·9	4·0
Hull	6·1	4·6	5·0	3·2
Sunderland	2·7	4·4	5·8	2·5
Newcastle	2·6	4·1	3·3	4·3
Average	3·4	4·0	3·6	2·6

The most interesting points in the above Table are, the marked progressive improvement in the zymotic rates of the Borough for the last three years compared with the average for the ten preceding years, and the fact that the figures for the last two years have been lower than the average of the twenty large English towns.

The ages and sex of the deaths in 1883 ascribed to the principal zymoties were as follow :—

Under 1 year	...	...	162	viz: Males, 88	...	Females, 74
From 1 to 5 years	...	113		„ 52	...	„ 61
5 years and upwards	...	57		„ 20	...	„ 37
All ages, both sexes	...	332		„ 160	...	„ 172

In the above analysis of the ages at death it is worthy of remark that about 49 per cent. of the deaths were of infants under one year of age, and 34 per cent. were of children whose ages ranged between one and five years. Of the 337 deaths from miasmatic diseases during 1882, 53 per cent. were infants under one year and 32 per cent. were children between one and five years. The decline in the proportion of deaths last year, of infants, is attributable to the lower fatality experienced from Diarrhœa in the autumn season.

The following is a statement of the Ward distribution of the deaths last year from the special zymotic diseases compared with the corresponding returns in 1882. In St. Martin's Ward only one death occurred from Scarlet Fever and no further fatality was recorded from other zymoties; in North Margaret's there were 48 deaths last year against 42 in the preceding year; in Middle Margaret's there were 114 deaths against 130; in East Margaret's 66 deaths against 74; East Mary's 12 deaths against 11; West Mary's 52 deaths against 80; and All Saints' 39 deaths against 70. The reduction in the deaths was most marked in West Mary's and All Saints' Wards.

WARD DISTRIBUTION OF DEATHS FROM ZYMOTIC DISEASES, 1883.

Wards.	Small Pox.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria.	Fever.	Diarrhoea.	Total Deaths.
St. Martin's Ward ...	...	...	1	...	...	...	...	1
North Margaret's " ...	1	2	9	7	1	1	27	48
Middle Margaret's " ...	2	5	37	26	...	1	43	114
East Margaret's " ...	...	6	21	11	4	2	22	66
East Mary's " ...	...	...	1	2	...	...	9	12
West Mary's " ...	...	1	10	8	1	6†	26	52
All Saints' " ...	...	1	12	5	...	...	21	39
Total Deaths ...	3	15	91*	59	6	10	148	332

* This number includes the Deaths in the Fever Hospital.

† Includes the Deaths of town patients in the Infirmary.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

It is now over four years since the notification of their infectious cases was first required of the medical men in the town, and I am happy to say that the evils anticipated by the profession from their fulfilment of this duty have in no way been realised. Their carrying out of the clause, at first considered so objectionable, affords conclusive proof that the fears entertained as to the result of "breach of confidence" upon their part to the patients under their care have had no actual foundation in practice, for no single instance has come to my knowledge where notification has in any way disturbed the previously existing relation between a medical man and his patient. The profession now fully co-operate with the Health Committee in this matter and, after a careful perusal of the Reports from various districts where notification is in force, it is gratifying to find that in Leicester this duty seems to have been efficiently performed with the least degree of hardship either to the medical men or the general public. As Medical Officer of Health, I take this opportunity of thanking the members of the profession for the cordial assistance they have thus afforded the Committee in their endeavours to lessen the prevalence of disease amongst the people. Sufficient time has now elapsed to make a review of the work done under compulsory notification of practical importance in discovering what advantages the public have derived from its application.

The number of certificates sent in by the medical men during the four years 1880—83 was as follows :—

RETURN OF CERTIFICATES OF DISEASES SENT IN TO THE SANITARY
AUTHORITY DURING THE FOUR YEARS 1880-83 (UNDER SEC. 8 OF
THE LEICESTER CORPORATION ACT, 1879).

1880.	Scarlet Fever.	Erysipelas.	Typhoid Fever.	Diphtheria.	Puerperal Fever.	Small Pox.	Typhus Fever.	Total.
1st Quarter...	222	86	32	17	1	0	0	358
2nd „ ...	156	75	16	24	1	0	0	272
3rd „ ...	165	109	75	24	4	0	0	377
4th „ ...	259	172	122	22	0	0	0	575
TOTAL...	802	442	245	87	6	0	0	1582

1881.								
1st Quarter...	147	137	51	15	2	1	0	353
2nd „ ...	193	91	22	21	3	1	0	331
3rd „ ...	419	143	50	10	5	1	0	628
4th „ ...	306	195	56	17	5	1	0	580
TOTAL...	1065	566	179	63	15	4	0	1892

1882.								
1st Quarter...	188	125	17	13	5	12	0	360
2nd „ ...	83	70	28	11	3	2	1	198
3rd „ ...	208	110	24	5	3	1	0	351
4th „ ...	284	150	41	9	3	1	0	488
TOTAL...	763	455	110	38	14	16	1	1397

1883.								
1st Quarter...	131	85	19	6	3	1	0	245
2nd „ ...	140	68	16	2	2	1	0	229
3rd „ ...	170	53	27	8	1	2	0	261
4th „ ...	356	111	23	10	6	0	0	506
TOTAL...	797	317	85	26	12	4	0	1211

As soon as notification became law, the greatly increased information received as to the localities where infectious disease existed, enabled the Sanitary Inspectors to visit and report immediately any sanitary defect or other conditions favouring the spread of Scarlet Fever, which at that time had gained an epidemic prevalence. From the reports sent in by the Inspectors as to the conditions found it was quite clear that no attempts had been made in the great majority of instances to isolate the sick from the healthy; the sending of children to school convalescent from the disease and still peeling was an occurrence very frequently met with; people were constantly found visiting infected houses unconscious of the risk they were incurring, and hosiery and other textile goods were, in scores of the houses, being finished off by mothers as they nursed children suffering from malignant forms of the disease. Milk was also being freely sold in retail shops where children were found suffering from Scarlet Fever.

To remedy these self-evident evils, various precautionary measures were, and continue to be, taken by the Health Committee, and their efforts have been attended with considerable success, for the instances described above, so favourable for the spread of infection, are now of proportionately rare occurrence. The parents of patients are cautioned against sending their convalescent children to school, and printed forms of preventive measures are supplied at the same time for their guidance. The school authorities now receive immediate notice of every house certified as infected, and the children are refused admission until the teacher receives a printed form from the Sanitary Office declaring the house to be free of infection. The danger to children from this source has thus been materially lessened and there can be no doubt that many school children have altogether escaped the disease by not being so frequently brought in contact with infected playmates.

The owners of milk shops, visited with the disease, are now given the alternative of either immediately stopping their sale of milk or sending their sick child to the Hospital and having the house fumigated, in which case they are permitted to continue the sale. It is of course impossible to estimate the amount of sickness averted by this means, but there are few, I think, who will question its beneficial influence. Again, every householder in whose family Scarlet Fever appears is now

furnished with a printed sheet setting forth the precautions to be taken and acquainting him of the penalties he will incur by the exposure of infected persons, clothing, &c., and, as was customary in times past, no householder can now plead ignorance if he send his infected children to school in the peeling stage of the disease.

During the last four years no less than 1,466 Scarlatinal patients were admitted into the Borough Fever Hospital. Now as every one of these cases, if treated at home, would have served as a centre of infection and danger to others, it follows that the isolation of such a large number of patients, drawn as they were for the most part from the denser populated districts of the town, must have saved many children of susceptible age from an attack of the disease.

As the primary object of all Sanitary measures is the prevention and limitation of disease, it cannot be denied that the action here taken with respect to Scarlet Fever has exercised a powerful influence in checking the rapidity of its spread, and in preventing the disease at any time acquiring its full degree of prevalence.

Among the chief advantages of notification, as carried out in Leicester, the following, to my mind, are of most importance:—*(a.)* The public are becoming more alive to the pit-falls fertile with disease which surround them; *(b.)* they are awakening to a fuller sense of their responsibilities under visitations of contagious diseases, and *(c.)* they are slowly but surely being made acquainted with the nature and mode of spread of such maladies, with the precautions necessary to arrest their inroad. With respect to this latter advantage, it will be remembered that the public, when notification first came into operation, were living in the grossest ignorance of the points which it touches upon, and large numbers are yet, I am sorry to say, wholly ignorant on the subject. The general enlightenment, however, of a population like Leicester, which now numbers 130,000, must of necessity be a work of time, and we cannot reasonably expect for some time to come to see recorded the full benefits to the public health which must follow the spread of such education in sanitary laws and their requirements.

The history as to the stamping out of Small Pox in 17 distinct importations of the disease, given in the succeeding chapter, is conspicuously noteworthy among the proofs of the advantages attending notification.

It will be observed from the list of certificates sent in that the prevalence of Diphtheria has steadily declined, the cases reported in 1880 being more than three times as numerous as in last year. In many of the houses where this disease was reported, the Inspectors discovered serious defects in the house drainage, which fully accounted for its appearance. Such defects were at once remedied and, the nuisance removed, no other members of the family fell sick with the complaint. Prior to the ruling of notification, these defects in house drainage, &c., remained for the most part uninterfered with until they were either discovered in the ordinary course of house inspection or, where a death occurred from Diphtheria, the mortality books first led to their revelation by the special inspection always instituted into the drainage of such houses. During these inspections it was by no means uncommon to find several other members of a family prostrated with the disease and breathing an atmosphere rendered foul and pestilential from a continuous and abundant entry of sewer gas into the abode. The circumstances just related apply with equal force to many of the cases of Typhoid Fever met with in times antecedent to compulsory notification.

The Typhoid Fever certificates for the four years, 1880-83, also show a marked and steady diminution in numbers, and the disease is seen to have been about three times less prevalent last year than in 1880. This decrease is in some measure to be ascribed to the more rapid repair of any defects in house drainage, &c., which an immediate inspection of the premises brought to light, but depends especially upon the much more extensive closure of polluted wells effected under the new method of water analysis (Frankland's process modified), adopted under my recommendation by the Borough Analyst. Under the application of the old method (Wanklyn's) of analysis to the well waters—a process still used in many towns—a large majority of the waters submitted were pronounced potable; under the new method, however, it is the exception to find one of them unpolluted.

Space will not permit of my entering more fully into a description of the substantial advantages which the public derive from the compulsory notification of infectious diseases, but sufficient proofs of its efficacy as an instrument in the limitation of human suffering have here been brought forward to commend its acceptance by Health Authorities generally.

SMALL POX.

During the year 1883, twelve cases of this disease were received into the Borough Fever Hospital. Three of the patients came from the county districts (Barrow and Goadby) and the remaining nine occurred in the town. The first of the town cases, a girl in one of the canal boats, was reported on the 23rd February; she was at once removed to the Hospital and the remaining persons in the boat were placed in quarantine. A fresh importation of the disease was reported on the 13th June in a house in Abbey Street. The patient was forthwith removed to Hospital and the remainder of the family, consisting of the mother and four children, were quarantined. The mother and one of the children, on the eleventh day of admission, sickened with the disease and were at once transferred to the proper wards. Another case, arising from the above, appeared on the 1st July in another house in Abbey Street. No other case came under notice until the 16th July when a woman was reported as suffering in Wright Street, the source of which I was unable to discover.

On the 27th July a young woman, aged 21 years, living at 52, Argyle Street, was attacked with the malady, and from enquiries I made as to the origin of her illness it was found that while on a visit to her mother, who was engaged in some capacity at the Small Pox Hospital in Birmingham, she was given a brown linen dress to wear when she returned to Leicester. This she did, with the result that at the end of a fortnight she was prostrated with the disease in its most virulent form and succumbed to it on the 6th August.

On the 31st August, two additional cases, having as far as could be ascertained no connection with the previous one, were reported in Argyle Street, making the fourth and last importation of the disease into the town during the year. Of the twelve cases admitted, three

ended fatally, all of whom were unvaccinated. Of the nine recoveries, seven were vaccinated and two unvaccinated. In only one of the seven vaccinated cases had primary vaccination been performed efficiently,—this patient had three *good* marks. In no instance had re-vaccination been had recourse to.

As a study of the returns of Small Pox Mortality in the Borough for previous years is both interesting and instructive, the deaths are given below for the last 32 years.

Years.	Deaths.	Years.	Deaths.	Years.	Deaths.
1852	... 52	1863	... 5	1874	... 0
1853	... 11	1864	... 104	1875	... 0
1854	... 0	1865	... 10	1876	... 0
1855	... 0	1866	... 3	1877	... 6
1856	... 1	1867	... 2	1878	... 1
1857	... 17	1868	... 1	1879	... 0
1858	... 53	1869	... 0	1880	... 0
1859	... 3	1870	... 0	1881	... 2
1860	... 2	1871	... 12	1882	... 5
1861	... 1	1872	... 346	1883	... 3
1862	... 0	1873	... 2		

Total—32 years : 642 deaths.

From these figures it would appear that from the year 1852 to 1872 the disease gained an epidemic prevalence attended with high proportionate fatality on no less than four occasions, the intervals between the acme of each visitation ranging from five to seven years. Indeed there is a striking regularity to be seen in its visitations during the twenty-one years referred to. It may also be observed from the return given above that since 1873 up to the present time—an interval of eleven years—the town has enjoyed an almost complete immunity from the inroads of the disease.

In the last seven years there have been no fewer than 17 importations of Small Pox into the town, viz :—

(a) In the year 1877, there was one importation and the disease appeared in six separate localities, but all traceable to the imported case, before its final arrest.

(b) In 1878, two importations occurred, and, in one instance, affected two houses.

(c) In 1880, one importation was reported, but no extension occurred.

(d) In 1881, four importations were reported, each unattended with extension.

(e) In 1882, there were four further importations, in one of which the disease extended to fourteen different localities before it was subdued.

(f) In 1883, five importations were reported, and, in one instance, affected two houses.

Notwithstanding this large number of importations the disease has always been stamped out, and the town thus saved from the distress and mortality which have hitherto accompanied its prevalence. In the following statement are shown the deaths recorded from Small Pox in eleven of the large towns since the time of our last visitation in 1872.

DEATHS FROM SMALL POX IN ELEVEN GREAT TOWNS.

Towns,	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	Total Deaths.
London	115	56	75	735	2544	1416	458	475	2371	431	134	8810
Bristol	9	26	70	24	0	0	0	2	0	0	0	131
Birmingham.....	122	639	175	0	8	5	1	2	6	17	110	1085
Leicester	2	0	0	0	6	1	0	0	2	5	3	19
Nottingham	0	0	0	0	0	0	1	0	4	51	2	58
Liverpool	10	30	29	386	299	3	0	2	34	6	26	825
Manchester	20	10	17	190	49	1	1	2	3	16	1	310
Salford	4	4	32	347	93	1	0	0	7	6	0	494
Leeds.....	112	34	20	4	3	0	0	0	2	31	11	217
Sunderland	1	0	0	0	0	1	0	0	0	1	50	53
Newcastle	4	0	0	1	1	0	0	0	9	57	59	131

The continued exemption from Small Pox experienced in Leicester under so many instances of its importation is highly satisfactory, and is altogether due to the success which has hitherto attended the efforts of the Health Committee in securing not only the immediate reporting but also the prompt removal to Hospital of all the cases as they came under notice. A review of the facts here stated will offer to most minds conclusive proof that if Health Authorities throughout the country could only secure the removal and isolation of initial cases of any of the essentially infective fevers, the excessive mortality now annually arising from them would rapidly be reduced to insignificant proportions, when compared with the fatality from other classes of disease.

FEVER HOSPITAL.

At the close of the year 1882 there were 48 patients under treatment for Scarlet Fever in this institution. During the first quarter of the year, 58 patients were admitted, 3 of whom were suffering from Small Pox, 54 from Scarlet Fever, and 1 from Erysipelas. In the second quarter, 67 patients were admitted; 3 were cases of Small Pox, 57 of Scarlet Fever, and 7 of Erysipelas. During the third quarter there were 83 admissions; 6 were cases of Small Pox, 73 of Scarlet Fever, and 4 of Erysipelas. In the fourth quarter the admissions (Scarlet Fever cases) greatly increased in number and reached 199 before the close of the year. The total patients received during the year amounted to 407; viz: 12 cases of Small Pox, 12 of Erysipelas and 383 of Scarlet Fever. Among the total 407 cases, 28 deaths occurred, viz: 3 from Small Pox, and 25 from Scarlet Fever. The mortality was equal to 6·8 per cent.

For the sake of comparison, the admissions of patients into the Hospital for the last six years are given in the following statement:—

Year.	Erysipelas.			Small Pox.		Scarlet Fever.		Total Cases.
1878.								
1st Quarter.	...	4	...	0	...	20	...	24
2nd „	...	0	...	8	...	8	...	16
3rd „	...	5	...	0	...	9	...	14
4th „	...	7	...	0	...	14	...	21
TOTALS		16	...	8	...	51	...	75
1879.								
1st Quarter.	...	6	...	0	...	16	...	22
2nd „	...	1	...	0	...	15	...	16
3rd „	...	3	...	0	...	83	...	86
4th „	...	6	...	0	...	133	...	139
TOTALS		16	...	0	...	247	...	263
1880.								
1st Quarter.	...	12	...	1	...	76	...	89
2nd „	...	4	...	0	...	50	...	54
3rd „	...	11	...	0	...	40	...	51
4th „	...	20	...	0	...	64	...	84
TOTALS		47	...	1	...	230	...	278
1881.								
1st Quarter.	...	6	...	2	...	59	...	67
2nd „	...	5	...	1	...	61	...	67
3rd „	...	6	...	2	...	174	...	182
4th „	...	25	...	1	...	99	...	125
TOTALS		42	...	6	...	393	...	441
1882.								
1st Quarter.	...	19	...	22	...	103	...	144
2nd „	...	8	...	7	...	34	...	49
3rd „	...	11	...	1	...	81	...	93
4th „	...	6	...	0	...	242	...	248
TOTALS		44	...	30	...	460	...	534
1883.								
1st Quarter.	...	1	...	3	...	54	...	58
2nd „	...	7	...	3	...	57	...	67
3rd „	...	4	...	6	...	73	...	83
4th „	...	0	...	0	...	199	...	199
TOTALS		12	...	12	...	383	...	407

Referring to the returns of certificates sent in by the medical men, I find that during the year no fewer than 797 habitations were visited with Scarlet Fever. Our experiences of the entries into Hospital of scarlatinal patients have proved beyond doubt that when the disease once gains admittance into artizan dwellings it is quite exceptional for any of the younger members of the families to escape its seizure. The actual number of persons affected with the complaint in the course of the year must therefore have been considerably in excess of the number of infected houses. If we take the lowest number, however, and say that the persons affected were equal in number to the houses certified,—*i.e.*, 797, it follows, from the record of Hospital admissions given above, that 414, or 52 per cent. of the total cases reported, were treated at their homes. These “home” cases were pretty evenly distributed over the entire area of the Borough. By deducting the Hospital admissions from the number of houses certified as infected in the three preceding years (Table on page 33), I find that in the year 1880, 71 per cent. of the cases were treated at their homes; in 1881 the per centage was equivalent to 63·1; and in 1882 to about 40·0 per cent. Taking the four years, 1880-83, the average per centage of cases treated at home was about 56. These “home” cases have hitherto exercised a more or less paralysing influence on the efforts of the Health Committee for the limitation of scarlatinal prevalence.

SCARLET FEVER.

Last year 66 deaths were registered in the Borough from this disease. To these must be added 25 fatal cases which occurred in the Fever Hospital, making the total Scarlatinal deaths equal to 91, against 72 and 184 in 1882 and 1881 respectively. Of the 91 cases, 10 occurred in the first quarter of the year, 21 in the second, 13 in the third, and no fewer than 47 in the fourth. The rate of mortality was equal to 0·70 per 1,000, against 0·57 in the previous year. The average annual rate in the eight preceding years, 1875-82, was 0·94 per 1,000, and ranged from 1·70 and 1·58 in 1875 and 1876, to 0·28 and 0·099 in 1877 and 1878 respectively.



EPIDEMIC SCARLATINAL MORTALITY IN LEICESTER IN PERIODS OF FOUR WEEKS.

YEAR	1858.	1857.	1858.	1859.	1880.	TOTAL DEATHS.	Mortality.
Population	64,447	65,208	65,969	66,730		310	4.7
Monthly Deaths	1 2 3 4 5 6 7 8 9 10 11 12 13 ... 2 5 2 ... 1 ... 1	1 2 3 4 5 6 7 8 9 10 11 12 13 ... 3 4 6 6 10 3 15 12 7 12 12 12 *	1 2 3 4 5 6 7 8 9 10 11 12 13 9 12 16 19 25 14 11 16 15 15 12 3 8	1 2 3 4 5 6 7 8 9 10 11 12 13 11 4 5 8 3 2 1 2 1 ... 1 1 *	1 2 3 4 5 6 7 8 9 10 11 12 13		
YEAR	1882.	1883.	1884.	1885.	1888.	294	4.02
Population	68,797	72,130	78,337				
Monthly Deaths	... 1 1 ... 1 ... 2 5 2 1 1 *	2 2 7 15 12 30 20 25 30 19 33 25 16	12 13 3 4 5 ... 1 1 1 1 4 2 ... *	... ..	... ..
YEARS	1889.	1870.	1871.	1872.	1873.	381	4.0
Population		95,883	97,500				
Monthly Deaths	... 1 ... 1 ... 2 1 3 *	4 6 3 1 3 1 11 11 34 62 66 59 25	15 16 10 10 9 6 8 3 1 3 3 3 2 *	... ..	... ..
YEAR	1874.	1875.	1878.	1877.	1878.	415	3.7
Population	106,743	109,458	112,173	114,888			
Monthly Deaths	... 1 2 ... 3 4 2 4 *	5 5 7 9 9 8 11 21 10 27 24 29 21	12 7 10 7 14 10 8 11 16 15 23 30 20	7 2 3 2 1 4 1 5 1 1 2 4 ... *	... ..	
YEARS	1879.	1880.	1881.	1882.	1883.	579	4.7
Population	117,603	120,325	123,040	126,275	129,483		
Monthly Deaths	... 1 4 1 4 2 1 7 13 20 15 19 20 *	12 7 4 13 6 7 3 4 12 5 16 12 17	12 6 9 6 7 11 18 18 31 24 19 19 12	6 12 5 2 2 2 2 2 3 9 11 7 8	4 2 3 3 8 7 6 3 5 5 12 15 18		

* Marks the beginning and end of each epidemic visitation.

During last year 797 houses were certified by the medical men as having Scarlet Fever. In 383, or 48 per cent., of the cases, the sick child was allowed to be removed to Hospital, and it may safely be presumed that the prompt isolation of so large a number of infected children exercised a beneficial effect, for many children of susceptible age must thus have escaped the disease altogether, and its full prevalence must at the same time have been considerably curtailed.

With the view of comparing the course and fatality of the present epidemic with our former experiences of the disease, I have drawn up the following statement of the monthly deaths during the rise and fall of four previous epidemic visitations. The first of these extended over an interval of 31 monthly periods, beginning in the second month of 1857 and ending about the sixth month of 1859. During this time the total mortality was 310, which, calculated on the mean population of the three years, represented a death-rate of 4·7 per 1,000 living. The second visitation began in the ninth month of 1862, and, maintaining an epidemic prevalence during the succeeding 29 months, subsided towards the end of 1864. The disease caused in all 294 deaths, equal to 4·0 per 1,000 of mean population. The third epidemic began in 1869 and remained over an interval of 28 monthly periods, subsiding towards the close of 1871. The total deaths caused by the disease during this time was 381, equal to 4·0 per 1,000 of mean population. The fourth epidemic began in the tenth month of 1874, and the disease continued more or less prevalent until the end of November, in 1877, a duration equal to three years and three months. The total deaths amounted to 415, or 3·7 per 1,000. The fifth epidemic began in the third month of 1879, and has maintained a varying degree of prevalence up to the present time. This last visitation has therefore extended over an interval of 63 months, and caused in all 579 deaths, or an annual average of 116. It will thus be seen that, compared with previous visitations, the present one has extended its stay over the longest period and, its whole course considered, has given rise to the highest fatality. For the explanation of this unsatisfactory result I have drawn up the subjoined Tables of Scarlatinal deaths, which allow of comparison being made as to the course of the epidemic in 20 of the principal English towns.

DEATHS FROM SCARLET FEVER IN TWENTY LARGE TOWNS,
DURING THE NINE YEARS, 1875-83.

Towns.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
London ...	3,651	2,297	1,576	1,792	2,706	3,073	2,108	2 004	1,989
Brighton ...	18	64	28	8	16	79	75	97	11
Portsmouth ...	47	447	39	16	11	8	25	40	17
Norwich ...	34	59	80	11	32	188	64	6	3
Plymouth ...	14	14	48	37	14	4	4	4	0
Bristol ...	457	284	51	36	90	239	154	75	34
Wolverhampton	26	59	224	40	17	42	56	27	23
Birmingham ...	271	204	234	993	311	122	165	245	321
Leicester ...	187	180	33	12	105	119	184	72	91
Nottingham ...	159	74	19	73	180	134	353	280	59
Liverpool ...	468	251	225	947	742	465	435	380	388
Manchester ...	325	343	366	346	336	327	96	95	237
Salford ...	251	178	119	185	203	279	84	79	81
Oldham ...	68	110	56	238	138	126	84	56	21
Bradford ...	459	143	106	156	181	189	119	66	35
Leeds...	231	320	151	253	281	126	77	164	672
Sheffield ...	312	278	209	724	356	269	77	200	461
Hull ...	279	58	31	20	78	61	696	264	77
Sunderland ...	60	134	134	185	246	305	143	168	39
Newcastle ...	76	51	69	222	282	135	50	82	123

ANNUAL RATE OF MORTALITY PER 1,000 IN TWENTY LARGE TOWNS,
FOR NINE YEARS, 1875-83.

Towns.	1875	1876	1877	Average Rate for 3 years, 1875-7	1878	1879	1880	1881	1882	1883	Average Rate, 1878-83.
London ...	1·059	·658	·45	·72	·50	·74	·84	·55	·51	·51	·61
Brighton ...	...	...	...	...	·08	·15	·77	·69	·88	·10	·45
Portsmouth ...	·383	1·177	·31	·62	·12	·08	·06	·19	·31	·13	·15
Norwich ...	·410	·707	·96	·69	·13	·37	2·19	·73	·07	·03	·59
Plymouth ...	...	...	...	...	·50	·19	·05	·04	·05	...	·14
Bristol ...	2·329	1·423	·22	1·32	·17	·42	1·12	·74	·36	·16	·50
Wolverhampton	·363	·813	·306	1·41	·54	·22	·55	·74	·35	·30	·45
Birmingham ...	·740	·549	·62	·64	2·60	·79	·31	·41	·60	·78	·92
Leicester ...	1·70	1·58	·28	1·19	0·99	·84	·92	1·49	·57	·70	·77
Nottingham ...	1·724	·790	·19	·90	·44	1·05	·77	1·88	1·45	·30	·98
Liverpool ...	·907	·481	·43	·61	1·78	1·36	·85	·79	·68	·69	1·03
Manchester ...	·911	·958	1·02	·96	·96	·91	·90	·28	·28	·71	·67
Salford ...	1·849	1·141	·73	1·24	1·09	1·12	1·50	·47	·43	·44	·84
Oldham ...	...	..	...	...	2·22	1·22	1·09	·75	·48	·18	·99
Bradford ...	2·727	·823	·59	1·38	·85	·93	·96	·65	·33	·18	·65
Leeds ...	·810	1·097	·51	·81	·83	·89	·40	·25	·52	2·10	·83
Sheffield ...	1·165	1·011	·74	·97	2·51	1·18	·88	·27	·69	1·56	1·18
Hull...	2·083	·434	·22	·91	·14	·52	·41	1·49	1·7	·44	1·30
Sunderland ...	·564	1·237	1·22	1·01	1·65	2·11	2·61	1·22	1·41	·32	1·55
Newcastle ...	·552	364	·49	·47	1·54	1·89	·90	·34	·56	·82	1·01

In the case of those towns visited during the last six years with a Scarlatinal epidemic, the fatality during each year of its prevalence indicates that the behaviour of the disease as to rapidity and extent of spread was much the same as on former visitations, while the total deaths, as might be expected from the increase of population, were more numerous in nearly every case. In these instances the course of the Scarlatinal wave was practically unopposed, great mortality resulted during its stay and, having attacked all susceptible persons exposed to its influence, the disease last year declined in many of the towns referred to.

If attention be now directed to the death-rate in Leicester during the same period (1878-83), it will be observed that, compared with the epidemic in 1875-76, the disease remained prevalent over a much longer period of time, the total fatality was much greater, but the death-rate was *for each year* less excessive. Again, the mortality in Leicester *during the full prevalence* of the disease was not by any means so high as that recorded of other towns. Proof is thus afforded that in Leicester the disease never attained a full degree of prevalence owing, no doubt, to the extensive removal of patients to Hospital, the number isolated, as previously shown, having been equal to about 44 per cent. of the total cases certified in the four years. But when this isolation was effected, there still remained in the town cases of the disease in 56 out of every 100 houses certified (the parents here refusing to allow of their children's removal to Hospital); and to indiscretion and carelessness on the part of parents during the nursing of these children at home we must mainly attribute the prevalence of the disease through so prolonged a period. The past course of the disease in the town may, in fact, not inaptly be compared to what is constantly observed in a home infected with it, where a persevering attempt is made at isolation. Here, on the first appearance of Scarlet Fever, the sick child is placed in a room by itself and carefully nursed by the mother, who at such times may, for greater security, wear a special dress, leaving it behind each time she rejoins the family below. For two or three weeks everything goes on well, the disease not extending; but, either from hurry or forgetfulness, the mother now and then omits to put on her special dress while nursing the child and, as a result, another child of the

family, infected from the clothes of the mother, is smitten with the disease. This fresh case is at once placed with the child first affected but now convalescent, precautions against further spread are redoubled, and an interval of weeks may again pass by before further indiscretions of the mother serve to infect the third child. Thus the disease slowly extends itself, and the mother at last finds that, as a result of her continuous care and multiplied anxieties, only one or two of her children have escaped seizure.

The prolonged prevalence of Scarlet Fever in Leicester has undoubtedly arisen from the continuous check given through isolation to its natural rate of spread; still, on the other hand, it will not be denied that very many children of susceptible age must have escaped the disease through the same means. And many persons will in future thus continue to escape Scarlet Fever through the isolation practised, but (with the limited powers for compulsory removal which the Health Authorities possess), so long as isolation is not applied to the main bulk of the cases of fever reported, a prolongation of its stay, with accompanying evils, will be the inevitable consequence.

DIARRHŒA.

Last year 148 deaths were registered from this cause, against 214 in 1882, and 252, the annual average for the ten preceding years. The diarrhoeal death-rate was equal to 1·14 per 1,000 which, if we except the rate in 1879, was lower than that recorded of any of the twenty-two preceding years. In 1879 the death-rate was only 0·7 per 1,000, the lowest on record.

Of the total 148 fatal cases, 129 or 87·2 per cent. occurred in infants under one year of age, 12 or 8·1 per cent. in children between one and five years, and only 7 or 4·7 per cent. in persons above five years of age. The deaths were distributed over the quarterly periods of the year as follow: 6 deaths were registered in the first; 4 in the second; 126 in the third, and 12 in the fourth. As usual the most fatal incidence was experienced in the third or summer quarter.

To assist Drs. Ballard and Power in their investigation into the cause of Summer Diarrhœa, meteorological and other observations were daily taken and recorded throughout the whole of last year. The enormous mass of information supplied to these gentlemen from all quarters since their enquiry began will, I have no doubt, enable them at no distant date to make known the circumstances which specially favour diarrhœal causation.

CONSTITUTIONAL DISEASES.

The forms of Constitutional diseases are arranged under two groups, the Diathetic and Tubercular. The total deaths registered from this class amounted to 337. The Diathetic diseases caused 80 deaths, 61 of which were due to Cancer, 13 to Dropsy, and 5 to Mortification. The fatality was here chiefly confined to adults, as only 3 out of the 80 deaths were of children under five years. The Tubercular diseases caused 257 deaths, viz., 211 from Phthisis, 20 from Tabes Mesenterica, 22 from Hydrocephalus, and 4 from Scrofula. Of the 211 deaths from Phthisis, 126 were of males and 85 of females, and their distribution over the several Wards was as follows: 2 occurred in St. Martin's, 12 in North Margaret's, 46 in Middle Margaret's, 53 in East Margaret's, 16 in East Mary's, 56 in West Mary's, and 26 in All Saints'. The more numerous deaths recorded from Consumption in East Margaret's and West Mary's Wards depend upon the fact that the deaths in the first-named Ward include those which took place in the Union Workhouse, and to the deaths in the second are added those of the Infirmary. The deaths last year from each one of the Tubercular diseases were less than in the previous year.

LOCAL DISEASES.

The deaths referred to the various causes included in this class of diseases amounted to 1,181, against 1,083 and 1,101 recorded in 1882 and 1881 respectively. Of the 1,181 deaths, 625 were of males and 556 of females; and as to age, 510 were children under 5 years, and 641 persons whose ages ranged from 5 to 85 years. Local diseases are

arranged under eight orders, the principal of which are,—Diseases of the *Nervous System*; of the *Circulatory Organs*; of the *Respiratory Organs*; of the *Digestive Organs*.

(a.) Of the total 1,181 deaths, 410 were due to various diseases of the Brain and Nervous System, Paralysis accounted for 46, Apoplexy for 37, Cephalitis for 13, and 70 were returned under “Brain Disease.” Convulsions, by far the most fatal of the diseases in this group, caused 238 deaths, distributed over the town as follows:—Two deaths occurred in St. Martin’s Ward, 30 in North Margaret’s, 90 in Middle Margaret’s, 34 in East Margaret’s, 6 in East Mary’s, 40 in West Mary’s, and 36 in All Saints’. The deaths from this cause were, with a single exception, confined to children under five years, and 196 of these were infants under one year.

(b.) The deaths from Heart Disease, &c., last year were 145, of which 76 were males and 69 females. Three of the deaths were due to Pericarditis.

(c.) The number of deaths due to the various diseases of the lungs amounted to 486—viz., males 256 and females 230. 286 of the deaths resulted from Bronchitis, 165 from Pneumonia, 12 from Laryngitis, 8 from Pleurisy, and 6 from Asthma. The deaths from Bronchitis and Pneumonia showed an increase of 57 on the number recorded in the previous year.

DEVELOPMENTAL DISEASES.

Under this class 525 deaths were returned in 1883. 169 of the fatal cases were adults, and the remaining 356 were almost exclusively children under five years. Of the 356 deaths among children, Premature Birth accounted for 85, Atrophy for 246, Teething for 10, Cyanosis for 6, and Spina Bifida for 3. The infantile mortality under these headings was distributed over the town as follows:—One death occurred in St. Martin’s Ward, 43 in North Margaret’s, 122 in Middle Margaret’s, 81 in East Margaret’s, 15 in East Mary’s, 63 in West Mary’s, and 31 in All Saints’.

HEALTH DEPARTMENT.

SANITARY WORK.

The Sanitary work of the Borough during last year was carefully and energetically carried out under the instruction of the Health Authorities. The number of nuisances reported and abated, together with the number of houses visited and inspected, show that a considerable amount of useful work was done. The removal of night-soil and ash-pit refuse was systematically and thoroughly performed during the year. The common lodging houses were regularly visited and reported, both as to their state of cleanliness and as to any infringement of the bye-laws. These reports were, with but few exceptions, satisfactory. The scavenging of the town was performed in a most satisfactory manner.

In July last I inspected and reported upon many of the Courts in the town, and called the attention of the Health Committee to the unsatisfactory condition of these houses and their surroundings. I showed at the same time that the duties of the two Sanitary Inspectors had of late years become so expanded, multiplied and onerous as to render the appointment of an additional Inspector an absolute necessity, if the work of inspection was to be executed in future in a thoroughly efficient manner. The Committee, who fully agreed with me as to the desirability of such an addition to the present Sanitary staff, shortly afterwards entered into an arrangement with Mr. Allan, Chief Building Inspector, to carry out the duties of Chief Inspector in both departments—*i.e.*, Sanitary and Building. This arrangement has so far worked satisfactorily. The Inspectors, Messrs. Braley and Buxton, relieved of much clerical work and not called upon to make special inspections out of the district they may be engaged upon, have now more time to devote to their ordinary duties. Under Mr. Allan's direction and guidance, a minute and systematic house-to-house inspection has been entered into, and the detailed information now daily recorded will prove of very considerable value for occasional reference or for use as a basis to any enquiry that may hereafter be

instituted. Some idea of the exhaustive nature of house inspection, as now carried out in the Borough, may be obtained from the following headings for the information required as to the state of *each* habitation visited :—

1. Name of Street, Road, or Court.
2. Number of House.
3. Number of Families.
4. Number of Inhabitants.
5. Number of Rooms.
6. Size, Height, and Condition of Rooms.
7. Cellar (if any), Condition, Liability to Flood, Traps, &c., and if used as Dwelling or Workroom, Height, and Ventilation.
8. Rooms in House used as Workshops (if any), or Workshops attached, state Size, Height, and Condition generally.
9. Yard,—Paving and Condition generally.
10. Drain,—Construction, Traps, Cesspool, Condition.
11. Closet or Privy and Urinal, Number, Description and Condition.
12. Soil Pipe of internal W.C., State, Condition and means of Ventilation.
13. Sink,—Condition, Description of Trap, and Connection with Drains.
14. Ashpit,—Number and Condition as to Depth, Covering and Ventilation.
15. Source of Water Supply.

Wherever house inspection is so thoroughly performed by thus carefully sifting all the conditions met with, it will be next to impossible for any defects injurious to health to escape the observation of the Inspectors.

During the year 1883, 1,104 notices were issued by the Sanitary Inspectors for the abatement of various nuisances, &c. ; 490 notices were also issued for the cleansing and lime-washing of filthy houses, and in 69 instances orders were sent out for the repair of dilapidated houses. The state of these 559 houses was first reported by the Inspectors and was subsequently verified by my own personal inspection

previous to the issue of the notices and orders. Of the total 490 filthy houses, 265 were in the Eastern and 225 in the Western district of the town. 690 houses were disinfected by fumigation with sulphur where there had been infectious diseases; 315 of the houses were in the Western and 375 in the Eastern portion of the Borough. 79 orders were also forwarded to householders for the removal of swine; 47 of these orders applied to houses in the Western and 32 to houses in the Eastern district. The work included in the large number of notices was for the most part complied with by property owners, thus rendering the issue of formal orders under the Public Health Act unnecessary.

No less than 2,066 orders were sent out by the Borough Surveyor, against 1,214 in the previous year. These orders, as will be seen below, were chiefly for the correction of various defects found in the course of inspection and for the provision of other Sanitary requirements which a maintenance of health demanded.

The following list is a summary of the orders issued last year and complied with without legal proceedings:—

	No.
To alter, repair and ventilate ashpits	202
To relay and repair defective drains	185
To substitute lead or iron pipes for brick shafts to sink-stones	514
To pave yards and passages and repair paving ...	193
To cleanse, repair, alter or build closets	353
To construct or repair urinals	115
To fix traps or gully grates	203
To repair, extend and ventilate soil pipes	55
To raise or repair floors	18
To cleanse or repair cisterns... ..	32
To construct or repair manure pits	3
To fill up old cesspools	20
To fix ventilated syphons	36
To abolish urinals	15
To provide spouting to closet eaves	33
To repair or construct surface channels	35
To reset grates	10
Miscellaneous orders to correct other sanitary defects	44

Total orders issued 2,066

UNWHOLESOME FOOD.

In the following statement are given the quantities and kinds of food condemned as unsound and seized by the Food Inspector, Mr. Wand, during the year 1883 :—

Meat	...	...	...	...	13,119 lbs.
Fish	...	...	...	...	17,119 lbs.
Rabbits	...	...	...	...	109
Turkeys	...	...	...	...	2
Rooks	...	...	...	...	176
Fowls	...	...	...	...	8
Mussels	...	...	...	...	51 bags
Crabs	...	...	...	...	56
Oysters	...	...	...	..	1 barrel
Fruit	...	...	...	...	2,011 lbs.

From the above list it will be seen that of those articles of food, the weight of which was ascertained, no less a quantity than 32,249 lbs., or 14 tons 7 cwt. 3 qrs. 21 lbs., was unsound. Such figures, while they constitute proof that the public are continually subjected to great risks through the unscrupulousness of some vendors of meat, are evidence of a commendable watchfulness on the part of the Inspector. The greater portion of the condemned food was destroyed at the request of Mr. Wand, but four prosecutions were instituted.

The first prosecution was for having unsound meat intended for food. The defendant in this case was fined £5, or a month's imprisonment.

The second was for a similar offence, and here the defendant was sentenced to imprisonment for two months, without the option of a fine.

The third was also a "meat case," in which two defendants figured. The case against one of them was dismissed, but the other was sent to prison for two months.

The fourth and last prosecution was taken against a person for having on his premises a large quantity of rotten fruit, suspected to be intended for food. The defence set up was that the fruit condemned as unsound was not intended for food. The magistrates here expressed a doubt and dismissed the case.

ADULTERATION OF FOOD.

The articles of food submitted during 1883 to the Borough Analyst for examination were as follow :—

Kind.	No. of samples collected.		Pure.	Adulterated.	
Milk	...	56	...	51	5
Gin	3	}	7	2
Rum	...	3			
Whisky	...	3			
Bread	...	41	...	41	0
Flour	...	12	...	12	0
Coffee	...	6	...	5	1
Butter	...	6	...	6	0
Lard	...	8	...	6	2

Of the 56 samples of milk, only five, or 9 per cent., were found to be adulterated. Of the adulterated samples, one was found to be impoverished by the addition of 4 per cent. of water; there was no prosecution. Another showed 15 per cent. of added water; the milkman was prosecuted, and a fine of £1 imposed. The next sample was found to be robbed of 20 per cent. of its cream, and a fine of 40s. and costs was imposed (second offence). The fourth sample showed 5 per cent. of added water, and was further impoverished by the removal of 50 per cent. of its cream; a prosecution was instituted, and the defendant was fined 20s. and costs! The fifth sample was certified to contain 15 per cent. of added water; the vendor was summoned and fined 10s.

Now I regard the adulteration of milk as a very serious and cruel offence, inasmuch as milk constitutes the staple food of infants and children both in health and during sickness. The infant mortality of Leicester has for many years past been excessive, and any act which deprives healthy young children of their proper *quantum* of nourishment, or proves in the least way destructive to their chances of recovery under visitations of disease, is here especially culpable, and the offenders should be subjected to penalties proportionately severe. From the fines imposed last year this view of the case, I venture with deference, but most respectfully to submit, does not seem to have been held by the magisterial bench, and for years past a degree of leniency has been shown to this class of offenders, which, far from acting as a deterrent, serves rather as an encouragement to the continuance of these profitable but criminal manipulations on the part of unprincipled milk vendors.

Of the total 138 samples of food and drink analysed in 1883, only ten, or 7 per cent., were pronounced to be adulterated. This proportion of adulteration is *very much lower* than applies to articles of food analysed in other large manufacturing towns. The reason of this is not altogether to be assigned to a much higher degree of conscientiousness affecting the tradesmen in the town, but depends more likely upon the unsatisfactory method adopted in the collection of samples. At present this duty is delegated to the Sanitary Inspectors, both of whom are well known to almost every tradesman in the Borough. In shops, therefore, where adulterated articles are sold, the Inspectors are at once recognised, and they are given samples of food by no means the same in quality as the general public are supplied with. In this way, and in this way only, can I reconcile the wide difference in favour of Leicester to be observed in its per centages of adulterated samples of food when compared with similar returns of most other English Boroughs. To rectify this I would strongly recommend the Health Committee to employ a person unknown to the tradesmen for the performance of this special duty.

WELL WATERS.

The number of well waters analysed in 1883 amounted to 188, against 233 in the previous year and 147, the annual average number submitted to analysis in the eight preceding years. Of the total 188 waters examined, 160, or rather more than 85 per cent. were condemned as polluted and unfit for drinking purposes. Since the powers under which these samples of water are collected came into operation (1874), about 755 wells have been closed within the Borough, and 352 or 46·6 per cent. of these closures were effected during the last two years. At the present time it is calculated that there are upwards of 1,400 houses or, roughly speaking, 7,000 persons who still derive their water supply from wells.

The results of the analyses of the 188 waters examined since the 2nd January, 1883, will be found tabulated in the Appendix with the localities from which the samples were drawn.

It will be remembered that in the year 1880 I made a special Report to the Health Committee on the results of my analyses of many of the surface well waters in the Borough, and suggested the advisability of some radical change being made in the method of analysis then in use. At my request borings were made in different districts during 1881 and samples of the natural water were procured and analysed by Dr. Meadows, the Borough Analyst. This gentleman fully endorsed the opinions I had expressed in my Report as to the character of the subsoil water obtained in the previous year from borings made under my own personal supervision. After a careful study of the different constituents shewn in the natural waters, a fixed standard of purity for future application to the entire district was at last agreed upon by the Public Analyst and myself. Some feeling was aroused at the time by my action in this matter, and the opinion I advanced as to the perfect justice of using such a standard of purity for judging of the potability of well waters was not shared in by all, and doubts, I know, are still entertained by some on the subject.

Whatever doubts may exist as to the justice of using a district standard in such cases, none can be entertained as to its greater efficacy in the detection of pollution than the Wanklyn process, which it supplanted. From the subjoined return, which shows the number of well waters analysed and condemned in the nine years, 1875-83, it will be seen that the percentages of waters condemned during the last two years, through the application of the district standard, far exceeded the proportion condemned in preceding years.

Year.		Wells Analysed.		Waters Condemned.
1875	...	53	...	36
1876	...	177	...	90
1877	...	78	...	33
1878	...	213	...	97
1879	...	200	...	79
1880	...	147	...	43
1881	...	76	...	25
1882	...	233	...	193
1883	...	188	...	160

The *Analyst* for last April gives the substance of a paper on "District Standards in Water Analysis" by A. Dupré, F.R.S. and Otto Hehner, F.I.C., which was read before the Society of Public Analysts on 14th February, 1883. In this paper, which is a most valuable contribution to analytical literature, Messrs. Dupré and Hehner say :—

"The question of a Standard by which to judge the quality of any particular sample of water has frequently been discussed, but as yet no generally satisfactory conclusion has been arrived at. Several standards have indeed been proposed, but none has been generally adopted, and we cannot say that we regret this result. The laying down of any one general standard by which to judge the great variety of waters met with in different parts of the country and in different geological formations is, in our opinion, at once impossible and undesirable. Impossible, because a given proportion of certain constituents for example, which, when found in a water of one district, would be

sufficient to condemn such water, might be admitted as perfectly harmless in a water from another district or source; undesirable, because such a standard in great measure weakens the feeling of personal responsibility of the analyst and by giving a spurious belief in the possession of knowledge to the ignorant frequently leads to error and the lasting discredit of analysts in general. Now, what we wish to impress on our fellow analysts is this—by all means take into consideration and, on suitable occasions, make use of such general standards as have been laid down by chemists of high ability and large experience; but use these standards cautiously and with discrimination, and judge every case on its own merits. Analysts who lack either the ability or the experience to stand on their own legs, and slavishly adopt standards laid down for them by others, have no business to meddle with water analysis at all, and the sooner they leave such work to their more experienced brethren the better it will be for themselves and for the credit of water analysis. But it may be asked, if general standards are of little or no use, how are we to judge of the fitness, or otherwise, of any given sample of water? Our answer is, by its conformity to, or divergence from the general character of the waters of the district from which it comes, or the geological formation from which it springs, which from their surroundings may fairly be taken as unpolluted. In other words, *have district standards instead of a general standard*. One advantage of such a standard, though not a chemical one, we should like to point out. Whenever the question of closing a well by legal action arises, the court before which the case comes has to be convinced of the unfitness of the water complained of. Now nothing so readily shows this as our ability to prove that the water departs in the direction of impurity, from the waters of the district.”

It is highly gratifying to me thus to have the opinions given in my Report for 1881* so thoroughly coincided in by men of such eminence

* “However desirable it would be for Health Authorities to have a fixed standard of purity for universal application in the analyses of well waters throughout the country, it is simply impossible to construct such a standard from the variations of subsoil everywhere met with and the manifold sources from which organic principles in surface waters are derived. The best method of obtaining a standard of purity for well waters to be used by a Health Authority is to ascertain, by frequent borings, the character and proportions of the constituents in the natural water of the district. When tested by such a measure, the analysis of well water, if polluted only to a slight extent, will always give results amounting to positive proof of pollution having taken place, and thus, while no injustice is done to owners of house property, the health of the consumers is safely guarded.”—*Sanitary Report on the Health of Leicester, 1881*.

as analysts. The recommendation of these gentlemen, while it should serve to disperse any remaining doubts as to the justice of using a district standard, supplies an additional testimony of its usefulness as a practical measure for the mitigation of disease.

SEWER CLEANSING AND IMPROVEMENT WORKS.

From further particulars as to measurements, &c., kindly supplied me in last July by the Borough Surveyor, Mr. Gordon, C.E., I am now enabled to complete the description of the work carried out in the cleansing of the town sewers. It would of course be impossible to tabulate the beneficial effect which the accomplishment of this much needed work has exercised on the public health, but there can be no doubt that the air above and the earth beneath the town have each been rendered purer through its means, while the dangers to health from pent up sewer-gas have also been very considerably diminished by the provision of increased ventilation to the sewers. Parallel with and closely following upon the execution of these important sanitary improvements is the highly significant fact, that the death-rates of 1882 and 1883 were the lowest ever recorded of the Borough, and it may reasonably be assumed that a portion of this satisfactory improvement in the general health has been effected through their agency.

From the statement on page 53 it will be seen that the main trunk sewers had been dealt with in the lower and flat-lying districts, from which large quantities of filth and silt had been removed. In continuing the examination of the sewers into the higher-lying districts, it was found that practically little or no cleansing was required, the gradients or fall of the sewers, being evidently such as to give a velocity to the sewage sufficient to carry any silt or heavy matter forward to the lower-lying districts. The work of improvement consisted therefore, in these cases, chiefly in the introduction of manholes

or inspection shafts, and combined lamphole and ventilating shafts. The existing shafts, constructed at the time the sewers were built and brought up to within five or six feet of the surface and there hermetically sealed down with large slabs, were also, as in the previous year, opened out and built up to the surface and provided with ventilating covers and step irons as a means of easier access to the sewers.

In my previous Report it was pointed out that as the sewer cleansing works through the lower lying districts reached the Humberstone Road, where the sewers begin to rise more rapidly, they were found to be comparatively free from deposit. 533 yards of the eastern relief sewer from the Humberstone Road across the Spinney Hill Recreation ground had been examined but not included in the tabulated statements. The examination of this sewer was continued through the Brick Fields on the south side of the Recreation ground and then along the Melbourne Road, St. Stephen's Road, St. James' Road across Mr. Hodges' field, Miss Baker's garden and along St. James' Place, thence across the London Road and along the Victoria Park Road to its termination, a distance of 2,752 yards or 1.56 miles from the Humberstone Road. As will be seen from Table A, 48 shafts were excavated for the purpose, after the exact position of the sewer had been determined by the testing rods, and the position of the existing brick shafts had by the same process been found. Nine of these latter were brought up to the surface, and 11 new manholes together with 28 new lampholes and ventilating shafts were constructed which, added to 5 existing manholes that had been brought up to the surface and provided with ventilating covers in Melbourne Road and St. Stephen's Road, make a total of 53 shafts acting as ventilators and usable as inspection shafts, which gives an average distance between the ventilators of about 52 yards. The central main sewer from Sanvy Gate through Church Gate and along Gallowtree Gate, Granby Street, and the London Road was also examined by means of excavated shafts so set out and at such distances as to serve for the construction of permanent manholes and lampholes in case the condition of the sewer was found to be such as not to require other intermediate shafts cleansing purposes. In this case (*vide* Table B.) there was a much larger number of old brick shafts covered over with York

slabs several feet below the ground which had to be found by the probing process, as also had the position of the sewer itself throughout nearly the whole of this length. There existed on this sewer, (2,176 yards or 1·23 miles in length) but 1 manhole brought up to the surface and provided with a ventilating cover. 23 of the old shafts referred to above as being covered with slabs were brought up to the surface and made into ventilating manholes, while 3 new additional manholes and 27 ventilating lampholes were constructed, the average distance apart of the whole of them being about 41 yards. The condition of this sewer as regards silt on the invert was such as to render it unnecessary to sink intermediate shafts for cleansing purposes.

The following Table gives a summary of the work accomplished in sewer cleansing up to the close of 1881, a full description of which will be found in my Report for that year:—

SUMMARY OF SEWERS CLEANSED IN 1881.

Description.	Length.		Size of Sewer.		Average Depth.		Minimum Depth.		Maximum Depth.		Old Brick Shafts covered with 6 feet to 7 feet of earth, now brought up to the surface.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.					
Main Outfall } Sewer }	10,940	8	...	...	20	7	18	9	22	5	45	7	18	5	176
Archdeacon Lane } Branch }	1,592	6	2	7	19	9	18	11	20	7	9	...	3	...	48
Sydney Street } Branch of Eastern } Sewer... .. }	6,113	1	(3 6) by (2 6) (3 0) by (2 0) and (2 0) (brl.)		14	0	13	4	15	6	20	5	16	2	116
Willow Street } and Cobden St. } Branches... .. }	2,242	5	(3 0) by (2 0)		16	0	13	7	18	0	2	5	13	1	93
Branch Sewers...	1,647	3	...	...	10	3	9	5	10	11	...	...	1	...	59
Total in Feet...	23,535	11													
" " Yards	7,845½		...	...	16	1	14	10	17	6	76	17	51	8	492

The branch main sewer or suburb sewer draining the northern and western portion of the town on the left bank of the Soar was next dealt with. This branch extends from St. Margaret's Pasture across the river and along Abbey Gate, Bradgate Street, and across Mr. Haek's stack yard, then crosses the Groby Road and passes through the fields on the south of the latter and under the railway to King Richard's Road; it next passes along Leamington Street, Little Holme Street and Great Holme Street as shewn by Table C. The position of this branch sewer and of the existing shafts was determined in the manner already described, excepting for the length of about 570 yards from the Railway to King Richard's Road for which permission is still required to make the requisite excavations and bring up the necessary shafts. *Along the entire length of this sewer, 2,014 yards or about 1.14 miles in length, there was not a single manhole or ventilating shaft brought up to the surface,* so that the sewer gases must have found their way through the traps of the street gullies and private drains and such soil pipes as happened to be ventilated. The fact of this sewer being for its whole length nearly under the influence of the back water from the Birstall Pond every time the engines and pumps stopped working at the pumping station or sewage works, made it all the more important that it should be well ventilated, as it must be evident that, bottled up as it had been, every time the pumps ceased working the water immediately rose in the sewer to the level of the Birstall Pond and the sewer gas was placed under compression and forced to the highest points of the private drainage there to escape through the traps, more particularly when water happened to be passed in at the inlets. In this state of tension the case would become worse during the working hours of the day while hot water, frequently charged with steam from the manufactories, was being passed into the sewers thus rarifying and expanding the air within them. For the reasons given above only 1,444 yards of this sewer have as yet been dealt with, but on this length 9 old shafts have been brought up to the surface and ventilated, while 7 new manholes and 19 ventilating lampholes have been constructed and 5 additional shafts excavated for cleansing purposes. I am given to understand that there is some doubt as to whether the 4 manholes and 8 lampholes in Mr. Haek's fields between the Groby Road and the Railway will be allowed to remain, but it is certainly highly desirable that they should, because if

they were abolished it would only be concentrating the ventilation more in the streets at the higher end of the sewer, while it will be evident that the system being carried out is to distribute the means of renewing the air within the sewers as uniformly throughout their entire length as possible, so as to prevent concentration at particular points other than high shafts capable of carrying the sewer air above the region of dwellings.

In connection with the above main line, the branch sewer in Great Holme Street, for a length of 268 yards, has been dealt with by 8 excavated shafts and the construction of 5 new manholes and 1 lamphole, the tabulated particulars of which will be found classed with branch sewers, Table D. In addition to this branch sewer, a large number of other branch sewers in various parts of the town have been dealt with either wholly or partially, according to the circumstances of the case. No less a length than 2,511 yards, or about 1.42 miles of such sewers in 31 different streets, has been put into working condition by cleansing such portions as required it, and for which purpose it was necessary to sink 250 shafts down to the sewer. There were no manholes or ventilating openings in any of these sewers, and 15 new manholes and 12 lampholes have been constructed. Although this number is insufficient and will require to be supplemented by many more, yet, under the peculiar circumstances under which it became requisite to undertake the cleansing and improvement works in these streets, the completion of the requisite number of manholes and ventilating shafts had to be postponed, but is at the present moment in progress. A reference to the Table D will shew that the work recorded therein was not systematically carried on, for it will be seen that various *short* lengths of sewer appear in it. This arises from the fact that in those particular streets some stoppage of a private drain had occurred or cellars had been flooded with sewage matter, leading to an opening of the house drain, which it was found, on further examination, could not be unstopped because of the street sewer being blocked. The latter had then to be opened in as many places as were requisite to sufficiently cleanse and put it into working order again. Where this could be done by 2 and 3 shafts, further openings for the purpose of introducing manholes and ventilating shafts were postponed until the improvement of the sewers in connec-

tion therewith could be undertaken on a systematic plan. In a large number of cases the cleansing works became so extensive that sewers had to be opened out and followed through various streets to their connection with a main sewer, while other branch sewers in connection with those first opened out were found at their points of junction to be in such bad condition that there appeared to be no escape from an extension of the cleansing operation to them if the work expended on the tributary mains was not to be entirely lost. In one case in Warrington Street, on the connection of a new drain from newly-erected dwellings with the sewer being attempted, it was found that the latter was blocked, and, a number of openings being made along the whole line of street, the sewer proved to be so bad that the Surveyor recommended the construction of a new sewer throughout the whole length of the street. This was done.

On Table E will be found a statement of branch sewers which did not require special cleansing, but on which new manholes and ventilating shafts have been constructed. They are the branch sewers in connection with the Humberstone Road main sewer from Cobden Street towards Humberstone, referred to at page 34 of my Report for 1881; and in order that the total length of sewers cleansed and improved may be fully recorded, I have included in the lengths that part of the Humberstone Road alluded to, as its length was not given in my former Report.

From the summary, Table F, it will be seen that, including 500 yards in the Humberstone Road alluded to above and not recorded in complete form in my former Report, there have been 10,440 yards, or about 6 miles, of sewer improved and partially cleansed during the year 1882, and on which 41 old and unused manholes have been brought up to the surface and provided with step irons and ventilating covers, while 56 new manholes and 100 lamphole shafts have been constructed. And although, as already set forth, additional manholes and lampholes are required in connection with many of the branch sewers dealt with, the number already put in gives an average distance of about 51 yards between them, being equal to about 31 to a mile. It will be noticed that along the whole length of sewers dealt with during the year 1882, there were only 9 ventilating openings, 5 of which were in Melbourne Road and St. Stephen's Road.

The total length of sewer improved in 1881 and 1882 amounts to 10·39 miles, with 358 ventilating openings, or an average of 34·45 to the mile.

The following new sewers and works of reconstruction have been carried out during 1883 :—

FOUL OR DEEP SEWERS.

	Feet.	In.
Warrington Street, reconstructed	408	0
Pasture Lane Canal Crossing, "sewer diversion"	87	6
	<hr/>	<hr/>
	495	6
Garfield Street, by private owner	265	0
	<hr/>	<hr/>
	760	6
	<hr/>	<hr/>

STORM WATER SEWERS.

	Feet.	In.
Narborough Road	822	6
Belgrave Road from Brandon Street towards Belgrave	410	0
Slater Street and Slater Street extension to the Park	1,687	0
Sidney Street	461	0
Hampden Street... ..	205	0
Evington Footpath	199	0
St. James' Road	842	0
London Road	1,362	0
Regent Street	551	0
College Street	213	0
Tichborne Street... ..	428	0
Aylestone Road Culvert... ..	222	0
St. Margaret's Church Yard	750	0
Friar Lane (reconstructed)	159	6
	<hr/>	<hr/>
	8,312	0
Garfield Street by private owner	305	0
	<hr/>	<hr/>
	8,617	0
	<hr/>	<hr/>

The length of new storm and foul water sewers and culverts, varying in size from a 12in. pipe to a culvert 4ft. 9in. by 4ft., carried out during the year 1882 in public and private streets is about 3,126 yards or 1·77 miles which added to those of the previous year, make about 8,687 yards or 4·93 miles of sewer carried out on the most modern principles both as regards the construction of the sewers themselves and with respect to ventilation. The following summary will shew the total progress made with new sewers of this character together with the improvement to existing sewers.

Year.	Sewers cleansed and ventilated.		New foul sewers.		New storm sewers.
	Yds.		Yds.		Yds.
1881.	7,845	...	1,392	...	4,169
1882.	10,440	...	253	...	2,872
	<hr/>		<hr/>		<hr/>
	18,285	...	1,645	...	7,041
	<hr/>		<hr/>		<hr/>

It is now found that there is a material improvement in the character of the sludge intercepted in the two first settling tanks at the sewage precipitating works, and that the quantity of sand or road detritus which was formerly pumped up has considerably diminished, and that the sludge thus precipitated previous to subjecting the sewage to the lime process is becoming more valuable as a manure. This result is no doubt largely due to the sewer cleansing works carried on during two years 1881 and 1882 and to the further improvement of intercepting by storm water sewers, the road detritus from passing to the sewers with the same facility as a direct connection with foul sewers afforded. The further contemplated improvements and the greater extension of interception of the road detritus at the surface, will prove still further beneficial to the general system of existing sewers rendering them less liable to stoppage by accumulation and, combined with increased ventilation, less dangerous to the inhabitants of every house having a drainage connection therewith. Every improvement of the character described cannot but assist very materially in improving the sanitary condition of the town if at the same time a like improvement can be effected in the drainage of the houses themselves throughout the Borough.

A. CONTINUATION of BRANCH EASTERN RELIEF SEWER,

from the end of Cobden Street, across the Humberstone Road, along Nedham's Field, New Street across Upper Charnwood Street, through the Recreation Ground, along Road proposed extension, Melbourne Road, St. Stephen's Road, St. James' Road, Hodges' Field, across Evington Footpath, through Miss Baker's Garden, along St. James' Place, across the London Road, and along the Victoria Park Road, shewing length of sewer examined, and number of new manholes and ventilating shafts constructed thereon.

Description.	Length.		Size of Sewer	Average Depth.		Minimum Depth.		Maximum Depth.		Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface-Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft.	in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.					
From Cobden Street to Nedham's Field across Humberstone Road ...	120	0	{ 2 6 by 1 6 }	12 2	10 10	13 7	...	...	1	...	1			
Nedham's Field under Railway, and New Street to Upper Charnwood Street	797	0	{ 2 6 by 1 6 }	11 4	10 1	13 6	1	1	3	...	5			
From Upper Charnwood St. through Recreation Grd. to Melbourne Rd. ex.	796	0	{ 2 6 by 1 6 }	12 11	12 3	13 7	2	1	3	...	6			
Melbourne Rd. proposed exten. (from Recreation Ground to Thomas St.) ...	925	0	{ 2 6 by 1 6 }	12 11	12 7	13 6	1	2	4	...	7			
Melbourne Rd. (from Thomas Street to Donnington St.) ...	797	6	{ 2 6 by 1 6 }	13 0	12 11	13 1	...	2	2	2	6			
Melbourne Rd. (from Donnington St. to St. Peter's Road)	789	6	{ 2 0 by 1 4 }	19 6	11 6	29 9	...	1	4	2	7			
St. Stephen's Road ...	1,082	0	{ 2 0 by 1 4 }	30 6	21 0	34 6	4	...	1	1	6			
St. James' Road ...	171	0	{ 2 0 by 1 4 }	19 2	17 4	21 0	...	1	...	...	1			
Hodges' Field and Evington Foot Path ...	529	0	{ 2 0 by 1 4 }	3 4	9 0	17 4	...	...	...	...	...
Miss Baker's Garden ...	210	0	{ 2 0 by 1 4 }	6 4	3 4	9 5	...	...	...	...	...
St. James' Place ...	403	0	{ 2 0 by 1 4 }	11 6	9 5	14 11	1	1	2	...	4			
Across London Road and Victoria Park Road ...	1,637	0	...	11 6	7 8	14 10	...	2	8	...	10			
TOTAL ...	8,257	0	...	13 8	11 6	17 5	9	11	28	5	53			

B. BRANCH MAIN, termed the CENTRAL SEWER, extending southwards, from Sanvey Gate along Church Gate, Gallowtree Gate, Granby Street, and London Road to the Granville Road, examined and ventilated and partially cleansed.

Description.	Length.	Size of Sewer.	Average Depth.	Minimum Depth.	Maximum Depth.	Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.					
Church Gate (from Sanvey Gate to the Clock Tower) ... }	1,773 6	2 6	12 3	9 8	22 0	5	...	9	1	14
Gallowtree Gate (from Clock Tower to Horsefair Street) ... }	737 0	2 0	15 11	15 2	16 10	3	...	3	...	6
Granby Street (from Horsefair Street to Campbell Street) ... }	1,434 0	2 0	14 6	11 5	16 8	4	1	5	...	10
London Road (from Campbell Street to the Railway) ... }	541 0	2 6	15 9	11 5	21 6	2	1	2	...	5
Under the Railway, adjoining London Road Bridge ... }	150 0	$\left\{ \begin{array}{c} 2 \\ \text{sewers} \\ \text{each} \\ 2\ 0 \\ \text{by} \\ 1\ 9 \end{array} \right\}$	11 8	5 0	21 6	2	...	...	...	2
London Road (from the Railway to De Montfort Street) ... }	457 9	2 6	12 6	12 0	13 0	2	1	2	...	5
London Road (from De Montfort to Saxe Coburg St.) ... }	552 9	2 0	12 3	12 0	12 6	1	...	4	...	5
London Road (from Saxe Coburg Street to Highfield St.) ... }	403 0	1 6	12 3	12 0	12 6	2	...	2	...	4
London Road (from Highfield Street to Granville Road) ... }	379 0	1 3	12 0	11 9	12 3	2	...	...	...	2
TOTAL ...	6,528 0	...	13 3	11 2	16 6	23	3	27	1	53

C. BRANCH MAIN, termed the SUBURB SEWER, extending northwards from St. Margaret's Pasture along Abbey Gate, Bradgate Street, Hack's Stackyard, across Groby Road along Hack's Fields, across the Railway, along Paget's Property, across King Richard's Road, along Leamington Street, Little Holme Street and Great Holme Street examined and ventilated and partially cleansed.

Description.	Length.		Size of Sewer.	Average Depth.		Minimum Depth.		Maximum Depth.		Old Brick Shafts.	New Manholes.		New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.					
From St. Margaret's Pasture to Abbey Gate	800	0	2	6	15	7	14	6	16	6	3	...	...	...	3
Abbey Gate... ..	254	3	2	6	15	6	15	4	15	8	...	2	1	...	3
Bradgate Street	584	4	2	6	16	4	15	4	17	8	...	1	4	...	8
Hack's Stack Yard and Farm Yard to the Groby Road ...	454	3	2	6	15	4	13	11	17	1	...	2	2	...	6
Hack's Fields to over the Railway... ..	1,667	9	2	6	13	1	12	0	14	6	2	2	8	...	12
From the Railway to King Richard's Rd. }	570		Lineal		Yards		Unventilated								
From King Richard's Road along Leamington Street ...	228	6	2	6	10	6	10	4	10	9	2	...	2	...	4
Little Holme Street ...	170	3	2	6	9	9	9	3	10	4	1	...	1	...	2
Great Holme Street (to end of Suburb Sewer)	172	7	2	6	9	4	9	3	9	5	1	...	1	...	2
TOTAL	4,331	11	...		13	2	12	6	13	11	9	7	19	...	40

D. Branch Sewers cleansed in various parts of the town.

Description.	Length.	Size of Sewer.	Average Depth.	Minimum Depth.	Maximum Depth.	Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft. in.	feet.	ft. in.	ft. in.	ft. in.					
Great Holme Street ...	803 8	$\left\{ \begin{array}{l} 2 \\ \& \\ 15\frac{1}{2} \end{array} \right\}$	8 1	7 6	8 6	...	5 1	...	...	8
Simpson Street	97 6	15	9 10	9 8	9 11	...	1	...	...	4
Syston Street	62 6	15	7 5	7 4	7 6	...	...	...	...	5
Abbey Street	31 10	18	11 9	11 9	11 9	...	1	...	...	2
Gravel Street	220 10	15	11 8	11 6	11 10	...	1 1	...	...	7
Gravel St. Extension...	216 6	15	11 5	11 2	11 8	...	...	...	...	8
New Lane	64 6	15	10 11	10 7	11 3	...	...	1	...	2
Lower Sandaere Street	155 6	15	10 8	10 7	10 9	...	1	...	...	6
Sandaere Street	145 0	15	10 9	10 7	10 11	...	...	...	...	5
Wanlip Street	76 2	15	7 1	7 0	7 2	...	...	...	...	3
Bedford Street	116 6	$\left\{ \begin{array}{l} 12\frac{3}{4} \\ \text{to} \\ 15\frac{1}{2} \end{array} \right\}$	10 8	10 6	10 10	...	...	1	...	5
Bedford Street	214 3	$\left\{ \begin{array}{l} 14 \\ \text{to} \\ 15\frac{1}{2} \end{array} \right\}$	12 0	11 8	12 3	...	1 1	...	...	9
Bedford Street	116 6	$\left\{ \begin{array}{l} 12 \\ \text{to} \\ 15\frac{1}{2} \end{array} \right\}$	10 8	10 6	10 10	...	...	1	...	5
Stanley Street and } Humberstone Road }	437 3	$\left\{ \begin{array}{l} 12 \\ \text{Pipe to} \\ 16\frac{1}{4} \\ \text{Brk.} \\ 13 \end{array} \right\}$	9 4	8 2	10 4	...	1	...	...	13
Grafton street	703 6	$\left\{ \begin{array}{l} 13 \\ \text{to} \\ 17 \\ 11 \end{array} \right\}$	11 0	8 10	12 9	...	3 3	...	...	20
Providence Place	403 0	$\left\{ \begin{array}{l} 11 \\ \text{to} \\ 15\frac{1}{4} \end{array} \right\}$	9 10	9 2	11 5	...	...	...	...	16
Denman Street	450 0	$\left\{ \begin{array}{l} 14\frac{3}{4} \\ \text{to} \\ 11\frac{1}{2} \end{array} \right\}$	10 1	7 0	12 0	...	...	...	...	15
Pingle Street	254 10	15	7 11	7 1	8 4	...	...	...	...	6
Britannia Street...	482 0	$\left\{ \begin{array}{l} 10\frac{3}{4} \\ \text{to} \\ 14\frac{3}{4} \end{array} \right\}$	9 0	8 6	9 6	...	...	...	...	12
Alfred Street	188 0	13 to 16	10 5	10 3	10 10	...	...	...	...	8
Lower Grove Street ...	207 1	$\left\{ \begin{array}{l} 14\frac{1}{2} \\ \text{to} \\ 16\frac{1}{2} \end{array} \right\}$	10 5	9 9 $\frac{1}{2}$	10 9	...	...	...	...	6

D. Branch Sewers in various parts of the town (*continued*).

Description.	Length.		Size of Sewer.	Average Depth.		Minimum Depth.		Maximum Depth.		Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft.	in.	feet.	ft.	in.	ft.	in.	ft.	in.					
Lower Garden Street...	68	0	$\left\{ \begin{array}{c} 9 \\ \text{Pipe} \\ \text{to} \\ 14\frac{1}{4} \\ \text{Br.} \\ 13\frac{1}{2} \end{array} \right\}$	9	1	8	1	9	7	...	...	...	...	4
Dryden Street	71	6	$\left\{ \begin{array}{c} \text{to} \\ 15\frac{1}{2} \end{array} \right\}$	10	5	10	3	10	6	...	1	...	...	3
Dryden Street	84	3	13 to 15	10	6	10	6	10	6	...	...	...	...	2
Fleet Street... ..	252	0	$\left\{ \begin{array}{c} 14 \\ \text{to} \\ 15\frac{1}{2} \\ 14\frac{3}{8} \end{array} \right\}$	10	5	10	3	10	7	...	...	...	...	11
Fleet Street... ..	189	4	$\left\{ \begin{array}{c} \text{to} \\ 15\frac{1}{2} \\ 14\frac{3}{8} \end{array} \right\}$	10	5	10	3	10	7	...	...	...	...	8
Byron Street	108	6	$\left\{ \begin{array}{c} \text{to} \\ 16\frac{1}{4} \\ 19\frac{1}{2} \end{array} \right\}$	10	6	10	4	10	9	...	...	...	...	4
Upper Brunswick St. ...	63	0	$\left\{ \begin{array}{c} \text{to} \\ 15 \\ 10\frac{1}{2} \end{array} \right\}$	12	6	12	6	12	6	...	...	...	...	3
Fennell Street	122	6	$\left\{ \begin{array}{c} \text{to} \\ 13\frac{1}{2} \\ 9\frac{1}{2} \end{array} \right\}$	11	7	11	3	11	9	...	...	...	...	4
Northampton Street ...	95	0	$\left\{ \begin{array}{c} 15\frac{3}{4} \\ 12\frac{3}{2} \end{array} \right\}$	10	5	10	3	10	6	...	...	1	...	6
Milton Street	173	2	$\left\{ \begin{array}{c} \text{to} \\ 15\frac{3}{4} \\ 12\frac{1}{2} \end{array} \right\}$	10	8	10	6	11	0	...	...	...	...	7
Grosvenor Street	297	10	$\left\{ \begin{array}{c} \text{to} \\ 15 \\ 12\frac{1}{2} \end{array} \right\}$	10	8	10	0	11	3	...	...	2	...	11
Belgrave Gate Sewer ...	186	7	$\left\{ \begin{array}{c} 16\frac{1}{4} \\ 11\frac{1}{2} \end{array} \right\}$	11	8	11	3	12	1	...	...	...	...	8
Friar Lane	166	6	$\left\{ \begin{array}{c} \text{to} \\ 15 \end{array} \right\}$	11	4	10	11	11	7	...	...	...	...	6
New Street	160	2	17 to 19	3	8	3	4	3	9	...	...	...	...	8
High Street... ..	47	0	...	...	...	...	...	...	...	...	...	...	...	...
Total... ..	7,532	0	...	10	9	8	9	10	6	...	15	12	...	250

**E. Main and Branch Sewers in various parts of the town.
Ventilated only.**

Description.	Length. ft. in.	Size of Sewer. ft. in.	Average Depth. ft. in.	Minimum Depth. ft. in.	Maximum Depth. ft. in.	Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Sur- face Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
Humberstone Road— from Cobden Street towards Humber- stone	2,200 0	$\left\{ \begin{smallmatrix} 3\ 6 \\ \text{by} \\ 1\ 6 \end{smallmatrix} \right\}$	23 1	12 9	33 6	...	10	2	...	12
Ash Street	450 0	15 0	7 6	7 0	8 0	...	1	4	...	} 6
Larch Street ... ..	...	...	...	...	...	...	1	...	...
Edwyn Street	534 0	15 0	9 9	8 0	11 2	...	...	1	2	1
Charnwood Street & Upper Charnwood Street	393 0	12 0	10 6	9 0	13 9	...	3	3	1	6
Mount Street	180 0	12 0	8 9	7 0	10 6	...	...	2	...	2
Sherrard Street	260 0	12 0	7 2	5 6	9 0	...	...	2	...	2
Saint Saviour's Road...	650 0	15 0	15 4	12 0	19 0	...	5	...	...	5
TOTAL	4,667 0	...	11 9	8 9	15 0	...	20	14	3	34

F. Summary of Sewers Cleansed and Ventilated.

Description.	Length.		Size of Sewer.	Average Depth.	Minimum Depth.	Maximum Depth.	Old Brick Shafts.	New Manholes.	New Ventilating Shafts.	M. H. and V. S. with Surface Gratings previously existing.	No. of Shafts excavated for cleansing purposes.
	ft.	in.	ft. in.	ft. in.	ft. in.	ft. in.					
A. Continuation of Branch Eastern Relief Sewer ... }	8,257	0	$\left\{ \begin{array}{c} 2\ 6 \\ \text{by} \\ 1\ 6 \\ 2\ 0 \\ \text{by} \\ 1\ 4 \end{array} \right\}$	13 8	11 6	17 5	9	11	28	5	53
B. Branch Main, termed the Central Sewer ... }	6,528	0	$\left\{ \begin{array}{c} 2\ 6 \\ \text{by} \\ 2\ 0 \\ 2\ 0 \\ \text{by} \\ 1\ 9 \\ 1\ 6 \\ \text{by} \\ 1\ 3 \end{array} \right\}$	13 3	11 2	16 6	23	3	27	1	53
C. Branch Main, termed the Suburb Sewer ... }	4,331	11	...	13 2	12 6	13 11	9	7	19	...	40
D. Branch Sewers in various parts of the town (cleansed) }	7,532	0	...	10 3	9 8	10 6	...	15	12	...	250
E. Branch Sewers ventilated in various parts of the town ... }	4,667	0	$\left\{ \begin{array}{c} 2\ 6 \\ \text{by} \\ 1\ 6 \\ 15 \\ \text{by} \\ 12 \end{array} \right\}$	11 9	8 9	15 0	...	20	14	3	34
TOTAL ...	31,318	11	...	12 5	10 8	14 8	41	56	100	9	430
Brought forward from previous Report ... }	23,535	11	...	16 1	14 10	17 6	76	17	51	8	492
GRAND TOTAL linl. ft.)	54,854	10	...	13 3	12 9	16 1	117	73	151	17	922



A P P E N D I X

TO THE

REPORT OF THE MEDICAL OFFICER OF HEALTH,
1883.

CONTENTS.

Well Waters Analysed.

Return of Births for East and West Leicester.

Tables I—VI. Deaths Registered in the Borough for each Quarter in 1883.

Table—Deaths Registered in the Borough for the year 1883, Classified
according to Age.

Disease Map.

DESCRIPTION OF SAMPLES OF WATER SUBMITTED TO THE
BOROUGH ANALYST FOR EXAMINATION IN 1883.

The Results of the Analysis are expressed in grains per Gallon.

Date of Collection.	Description.	Chlorine.	Nitrogen as Nitrates.	Free Ammonia.	Character of Sample.
	Average Standards in Virgin Water ...	1'1	105	001	
1.—Jan. 2.	14—18, Lee-street ...	4'3	0'699	0'005	Clear
2.— „	2—6, Alfred-street...	7'5	0'370	0'004	Clear
3.— „	1—3, Alfred-street & 32—44, Lee-street ...	7'1	1'233	0'002	Clear
4.— „	46—56, Lee-street ...	4'8	0'823	0'000	Clear
5.— „	26—32, Orchard-street ...	6'4	0'822	0'002	Clear
6.— „	16—22, Royal East-street...	2'5	0'061	0'001	Clear
7.— „	34—40, Orchard-street, and 19—20, Archdeacon-lane	9'0	1'410	0'028	Clear
8.— „	7—9, Archdeacon-lane ...	1'5	0'369	0'002	Clear
9.—Jan. 8.	9—15, Richard-street ...	2'3	0'452	0'023	Clear
10.— „	3—5, Cobden-street ...	3'0	0'453	0'005	Clear
11.— „	8—10, Cobden-street ...	4'8	0'720	0'011	Clear
12.— „	34—40, Cobden-street, and 3 houses in yard at back	2'0	0'528	0'006	Clear
13.— „	78—80, Wheat-street, and A, B, Benford-street ...	9'0	0'781	0'010	Clear
14.— „	6—7, Foundry-square, and 2—8, Foundry-lane ...	24'0	1'105	0'068	Clear
15.— „	16—18, Navigation-street...	7'2	0'391	0'011	Clear
16.— „	50—52, Burley's-lane ...	11'3	0'765	0'016	Clear
17.— „	13—15, St. Margaret's-street	4'7	0'370	0'001	Clear
18.—Jan. 13.	35—37, Cranbourne-street...	7'5	1'430	0'006	Clear
19.— „	85—91, Cranbourne-street...	16'0	0'905	0'001	Clear
20.— „	93—99, Cranbourne-street...	2'6	0'510	0'002	Clear
21.— „	129—135, Gresham-street...	14'8	0'692	0'002	Clear
22.— „	14, Lower Garden-street, and 17, Royal East-street ...	6'2	0'740	0'022	Clear
23.— „	2 and 4, Luke-street ...	16'0	0'579	0'033	Clear
24.— „	24—28, Bay-street...	12'5	0'908	0'019	Clear
25.— „	1—5, Bay-street, and 2—4, Devonshire-street ...	5'5	0'653	0'008	Clear
26.—Jan. 20.	86 and 88, Friars'-causeway	7'2	1'048	0'026	Clear
27.— „	78—84, Friars'-causeway ...	8'1	0'740	0'015	Clear
28.— „	53, Jewry Wall-street ...	12'4	1'399	0'008	Clear
29.— „	9—17, St. Peter's-lane ...	9'3	0'008	0'020	Clear
30.— „	69—75, Lee-street ...	5'2	1'235	0'006	Clear

Date of Collection.	Description.	Chlorine.	Nitrogen as Nitrates.	Free Ammonia.	Character of Sample.
	Average Standards in Virgin Water ...	1.1	105	001	
31.—Jan. 20.	61—67, Lee-street ...	1.0	0.411	0.005	Clear
32.— „	53—59, Lee-street ...	2.8	1.400	0.004	Clear
33.— „	20—28, Lee-street ...	3.2	0.576	0.018	Clear
34.—Feb. 3.	2, Aylestone-street...	10.5	1.126	0.011	Clear
35.— „	52, 54, 56, 58, 60, and 50, Aylestone-street ...	6.0	1.315	0.008	Clear
36.— „	4 and 6, Aylestone-street ...	5.8	0.892	0.015	Clear
37.— „	67—71, Aylestone-street ...	4.0	0.937	0.011	Clear
38.—Feb. 10.	52 and 54, Deacon-street ...	3.3	0.815	0.01	Clear
39.— „	4—14, Jarrom-street ...	9.3	0.592	0.006	Clear
40.— „	28—38, Jarrom-street ...	11.6	0.910	0.022	Clear
41.— „	15—21, Atkin-street ...	4.8	0.710	0.0065	Clear
42.— „	45—47, Stanley-street ...	8.4	0.905	0.004	Clear
43.— „	86—88, Stanley-street ...	6.0	0.816	0.012	Clear
44.— „	61—63, Stanley-street ...	6.1	0.892	0.000	Clear
45.— „	42, Stanley-street, and 2 houses in yard ...	4.6	1.234	0.002	Clear
46.—Feb. 26.	47—53, Napier-street ...	3.0	0.658	0.01	Clear
47.— „	42—48, Napier-street ...	3.2	0.411	0.03	Clear
48.— „	55—61, Napier-street ...	4.0	0.904	0.01	Clear
49.— „	57—61, New Bridge-street, and 2, Raglan-street ...	1.7	0.493	0.002	Clear
50.— „	38—40, Stanley-street ...	11.3	1.399	0.008	Clear
51.— „	36, Stanley-street ...	9.3	0.946	0.007	Clear
52.— „	8—10, Stanley-street ...	3.0	0.905	0.01	Clear
53.— „	158, Humberstone-road, and 2 houses in yard ...	5.5	1.243	0.003	Clear
54.—Mar. 3.	54—70, Fleet-street ...	6.0	1.005	0.05	Clear
55.— „	50—52, Fleet-street ...	11.2	0.493	0.002	Clear
56.— „	33—35, Fleet-street ...	3.5	0.402	0.003	Clear
57.— „	27—31, Fleet-street, and 8 houses in yard ...	9.5	0.576	0.006	Clear
58.— „	6 and 8, Walnut-street ...	3.0	0.402	0.003	Clear
59.— „	2—10, Clinton-street ...	6.5	1.232	0.004	Clear
60.— „	15—21, Grange-lane, and Dun Cow yard ...	8.0	0.582	0.004	Clear
61.— „	25—29, Middle-street ...	4.5	1.111	0.002	Clear
62.—Mar. 10.	78—84, Friars'-causeway ...	7.5	0.781	0.015	Clear
63.— „	11—17, Queen-street, and 57, St. George-street ...	2.8	0.823	0.001	Clear
64.—Mar. 15.	44, Church-gate ...	6.2	1.106	0.023	Clear
65.—April 9.	14—20, Northumberland-st., and 6—18, Craven-street	7.3	1.460	0.015	Clear
66.— „	22—26, Northumberland-st.	7.6	1.646	0.018	Clear

Date of Collection.	Description.	Chlorine.	Nitrogen as Nitrates.	Free Ammonia.	Character of Sample.
	Average Standards in Virgin Water ...	1.1	105	001	
67.—April 9.	28—36, Northumberland-st.	11.8	1.510	0.041	Clear
68.—	Court P, Northgate-street, & 69—73, Northgate-street	8.5	1.540	0.053	Clear
69.—	40—42, Crafton-street ...	4.6	0.612	0.012	Clear
70.—	84, Crafton-street ...	10.5	1.934	0.014	Clear
71.—	86—88, Crafton-street ...	5.0	1.670	0.012	Clear
72.—	52—66, Wharf-street ...	6.6	1.632	0.016	Clear
73.—April 23.	1—7, Northampton-street...	15.4	2.140	0.036	Clear
74.—	34—42, Northampton-street	15.7	1.312	0.021	Clear
75.—	30—32, Southampton-street & 59—61, St. George-street	7.4	1.272	0.023	Clear
76.—	2—8, Talbot-lane ...	9.0	1.420	0.013	Turbid
77.—	3 and 5, Welles-street ...	8.2	1.450	0.020	Clear
78.—	21—27, Alexander-street ...	2.8	0.931	0.019	Clear
79.—	9—13, All Saints'-road ...	7.3	0.998	0.014	Clear
80.—May 1.	45—53½, Upper Conduit-st.	7.6	1.728	0.005	Clear
81.—	13—21, Upper Conduit-st.	3.7	1.440	0.002	Clear
82.—	3—11, Upper Conduit-street	5.3	1.193	0.002	Clear
83.—	12—16, Sparkenhoe-street, & 2—10, Upper Conduit-st.	8.3	1.357	0.056	Clear
84.—May 2.	24 and 26, New Bond-street	7.5	1.642	0.040	Clear
85.—	34, East Bond-street ...	2.3	0.542	0.002	Clear
86.—	11 and 13, Blake-street ...	7.5	1.121	0.003	Clear
87.—	10—14, Butt Close-lane ...	6.1	1.192	0.009	Clear
88.—May 11.	78, Granby-street ...	3.3	1.523	0.014	Clear
89.—July 23.	3—13, Sarah-street, & 48— 54, Rnding-street Friars	9.5	1.028	0.009	Clear
90.—	35—39, Ruding-street ...	7.4	0.654	0.008	Clear
91.—	27—33, Ruding-street ...	6.6	1.274	0.008	Clear
92.—	2—10, Sycamore-lane ...	7.5	1.153	0.016	Clear
93.—	6, Southgates ...	7.7	1.238	0.003	Clear
94.—	90, Higheross-street ...	7.8	1.440	0.001	Clear
95.—	142 & 144, Higheross-street	7.3	1.399	0.000	Turbid
96.—July 23.	132, Higheross-street ...	3.0	0.452	0.000	Turbid
97.—	117 & 121, Higheross-street	4.8	1.194	0.000	Turbid
98.—	39, Cumberland-street ...	7.9	0.885	0.005	Clear
99.—	2—4, Lewin-street...	4.8	1.244	0.000	Clear
100.—	295—301, Belgrave-gate ...	7.3	1.360	0.002	Clear
101.—	289—293, Belgrave-gate ...	9.1	1.299	0.000	Clear
102.—	247, Belgrave-gate ...	6.6	1.231	0.001	Clear
103.—	249, Belgrave-gate ...	3.0	0.452	0.002	Clear
104.—	241, Belgrave-gate ...	13.3	1.532	0.090	Clear

Date of Collection.	Description.	Chlorine.	Nitrogen as Nitrates.	Free Ammonia.	Character of Sample.
	Average Standards in Virgin Water ...	11	105	001	
105.—	„ 237A, Belgrave-gate, and 4, Woodboy-street ...	12.3	1.400	0.002	Clear
106.—	„ 223, Belgrave-gate ...	1.9	0.432	0.002	Clear
107.—	„ 219—221, Belgrave-gate ...	9.0	1.149	0.005	Clear
108.—	„ 211, Belgrave-gate ...	7.3	1.433	0.000	Clear
109.—	„ 205—207, Belgrave-gate ...	19.8	1.535	0.001	Clear
110.—July 30.	197, Belgrave-gate ...	9.0	1.145	0.048	Clear
111.—	„ 193 and 199, Belgrave-gate	11.0	1.211	0.023	Clear
112.—	„ 171, 3, 5, Belgrave-gate ...	8.7	0.919	0.027	Clear
113.—	„ 155, Belgrave-gate ...	3.4	1.428	0.0125	Clear
114.—	„ 104 and 106, Church-gate...	5.5	1.584	0.002	Very turbid
115.—	„ 105, Church-gate ...	2.4	0.787	0.036	Clear
116.—	„ 65, Church-gate ...	15.9	1.430	0.010	Clear
117.—	„ 67—71, Church-gate ...	17.3	2.869	0.006	Clear
118.—July 31.	11—13, Marston-street ...	7.4	1.257	0.018	Clear
119.—	„ 15—17, Marston-street ...	5.1	1.229	0.005	Clear
120.—	„ 30½, Upper Conduit-street	21.0	2.376	0.010	Clear
121.—	„ 41—47, Northampton-street	9.5	1.646	0.000	Clear
122.—	„ 120—124, Wellington-street, and 2 & 4, Ashwell-street	8.0	0.946	0.000	Clear
123.—	„ 51, Wellington-street, and 47—49, Wellington-street	2.9	0.561	0.001	Clear
124.—	„ 14, Chatham-street ...	10.5	0.862	0.002	Clear
125.—	„ 2—6, Coventry-street ...	2.8	0.523	0.004	Slight sediment
126.—Aug. 13.	46, Woodboy-street ...	6.0	1.361	0.038	Clear
127.—	„ 45—49, Woodboy-street, & 138—140, Belgrave-gate, and 2, Russel-square ...	11.5	1.778	0.032	Clear
128.—	„ 1, Byron-street, and 45— 47, Bedford-street ...	8.9	1.403	0.037	Clear
129.—	„ 16—30, Dryden-street ...	12.3	1.934	0.013	Clear
130.—	„ 125—131, Belgrave-gate ...	9.0	2.212	0.012	Clear
131.—	„ 109, Belgrave-gate...	2.7	0.449	0.005	Clear
132.—	„ 11—15, Devonshire-street, & 29—33, Barston-street	10.3	1.558	0.005	Clear
133.—	„ 56, Lower Church-gate, and Court A, Friday-street ...	4.7	0.823	0.000	Clear
134.—	„ 7—13, Friday-street, and 42 & 44, Lower Church-gt.	8.4	1.630	0.011	Clear
135.—	„ 32—38, Lower Church-gate	16.6	1.552	0.012	Clear
136.—	„ 72, Sanvey-gate ...	8.2	1.418	0.063	Clear
137.—	„ Court T, Sanvey-gate ...	6.3	1.410	0.030	Clear
138.—	„ 43—53, Lower Church-gate	7.3	1.737	0.032	Clear
139.—	„ 11, Lower Church-gate ...	4.8	1.308	0.008	Clear

Date of Collection.	Description.	Chlorine.	Nitrogen as Nitrates.	Free Ammonia.	Character of Sample.
Average Standards in Virgin Water ...		1'1	1'05	1'001	
140.—Aug. 27.	72—74, Bedford-street ...	8'7	1'598	0'018	Clear
141.—,,	133, 133A, Curzon-street ...	3'3	1'174	0'007	Clear
142.—,,	118—120, Curzon-street ...	7'0	2'921	0'012	Turbid
143.—,,	9—17, Dysart-street ...	6'2	1'558	0'005	Clear
144.—,,	15—21, Blake-street ...	5'7	1'469	0'003	Clear
145.—,,	2—16, Durham-street ...	8'8	1'871	0'021	Clear
146.—,,	55, Burgess-street ...	5'1	1'832	0'019	Clear
147.—,,	10, Lower Church-gate ...	4'4	1'226	0'018	Clear
148.—Sept. 5.	64, Abbey-gate ...	2'5	0'520	0'004	Clear
149.—,,	3, Abbey-gate ...	3'0	0'132	0'005	Clear
150.—,,	29 and Court C, Frog-island	2'4	0'142	0'003	Clear
151.—,,	19 and 21, Frog-island ...	2'9	0'145	0'004	Clear
152.—,,	84, Willow-street ...	9'0	0'246	0'001	Clear
153.—,,	70, Willow-street ...	9'7	0'570	0'006	Clear
154.—,,	53, 5, Willow-street ...	8'0	1'769	0'005	Clear
155.—,,	21, Wanlip-street ...	6'3	1'399	0'000	Clear
156.—Sept. 17.	78, Wharf-street ...	11'3	1'632	0'006	Clear
157.—Oct. 6.	Top Court B, Mansfield-st.	8'0	0'041	0'067	Clear
158.—,,	15, Thames-street ...	7'5	1'628	0'004	Clear
159.—,,	A, B, C, Mansfield-street ...	4'0	0'970	0'017	Clear
160.—,,	3½, 5, 7, Gower-street ...	3'7	1'475	0'006	Clear
161.—,,	4—6, Wilton-street ...	6'6	1'366	0'030	Clear
162.—Oct. 17.	14, Bishop-street ...	0'9	0'061	0'006	Clear
163.—Oct. 22.	115—117, Curzon-street ...	6'7	1'112	0'000	Clear
164.—Oct. 27.	1—11, Chester-street ...	5'0	0'288	0'004	Clear
165.—Nov. 23.	3—9, Kent-st., N.B. street	9'6	0'992	0'005	Clear
166.—Dec. 17.		12'3	1'314	0'009	Clear

BIRTHS REGISTERED IN THE BOROUGH DURING THE YEARS 1882—83.

1882.		Males.	Females.	Total.	Illegitimate.		Per cent. of Illegitimate.	Attendance.	
					Births.	Deaths.		Medical.	Midwife.
East Leicester ...	...	1,665	1,608	3,273	149	63	42.28	1,347	1,926
West Leicester ...	...	793	789	1,582	62	27	43.55	844	738
TOTAL ...	...	2,458	2,397	4,855	211	90	42.65	2,191	2,664
1883.									
East Leicester ...	...	1,625	1,619	3,244	158	70	44.3	1,366	1,878
West Leicester ...	...	782	761	1,543	60	38	63.3	811	732
TOTAL ...	...	2,407	2,380	4,787	218	108	49.5	2,177	2,610

TABLE OF DEATHS FOR THE QUARTER ENDING JUNE 30, 1883.

[illegible]





[illegible]

Sewers Cleansed and Ventilated.....

Sewers Ventilated only.....

Scarlet Fever Deaths are marked.....

Whooping Cough

Dysentery

